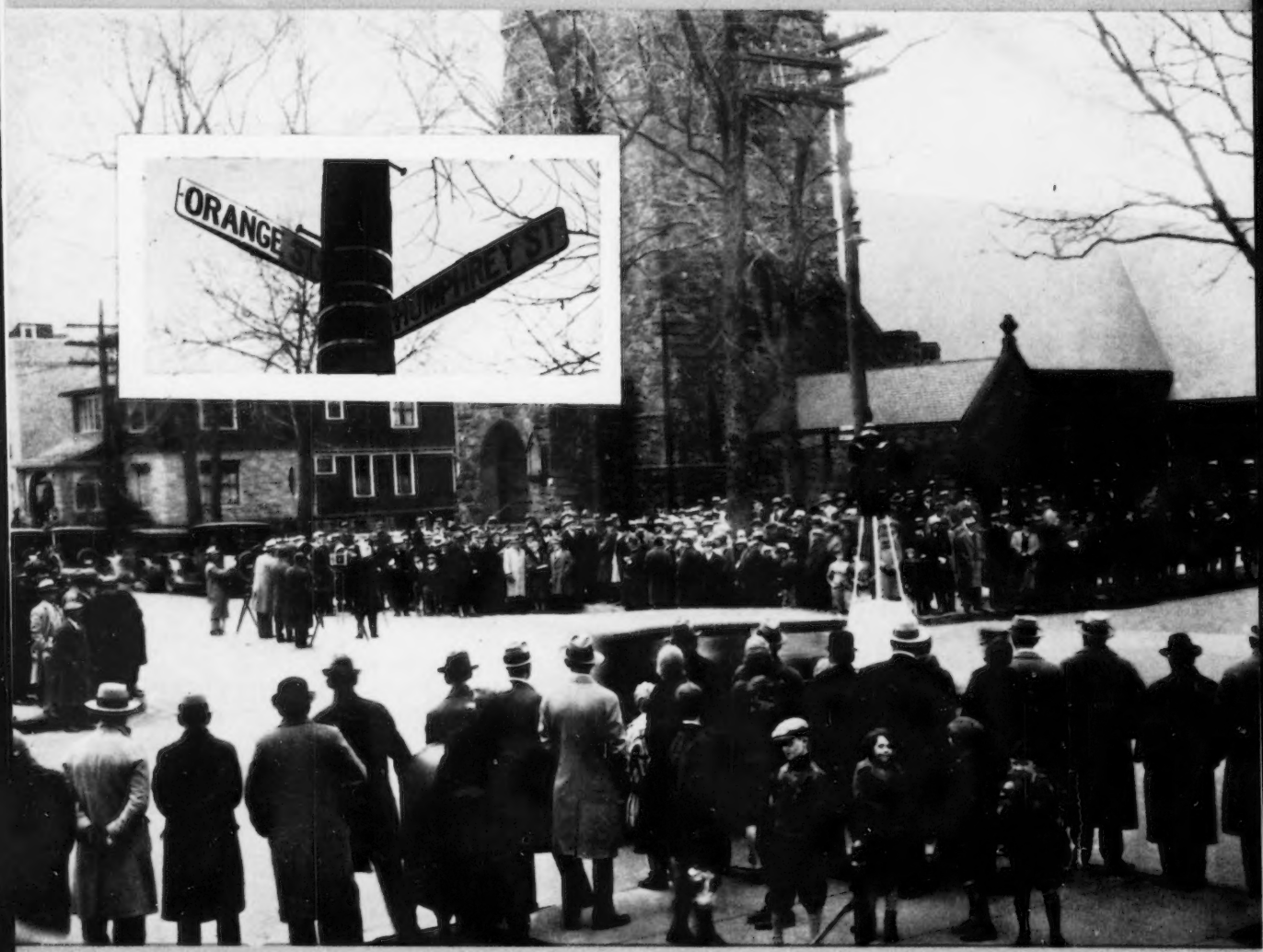
APRIL, 1954

Traffic Engineering



Official inauguration of full-actuated traffic control, New Haven, Connecticut. April 10, 1928

- The Car and the Road
- The Field of Modern Interconnected Traffic Control Signals
- Traffic Controls in the Vicinity of School Zones, Part 2

Official Publication of the Institute of Traffic Engineers

Night driving safety assured...

and prestressed HY-LITE SPUN-CRETE STANDARDS guarantee low-cost service for years

Prestressing is the biggest news in lighting standards for years. This exclusive feature of Hy-Lite Spun-Crete Standards assures much greater strength and durability.

Check these advantages:

1—GREATER RIGIDITY . . . Prestressing gives greater strength with maximum rigidity under designed loads and greater *flexibility* under overloads.

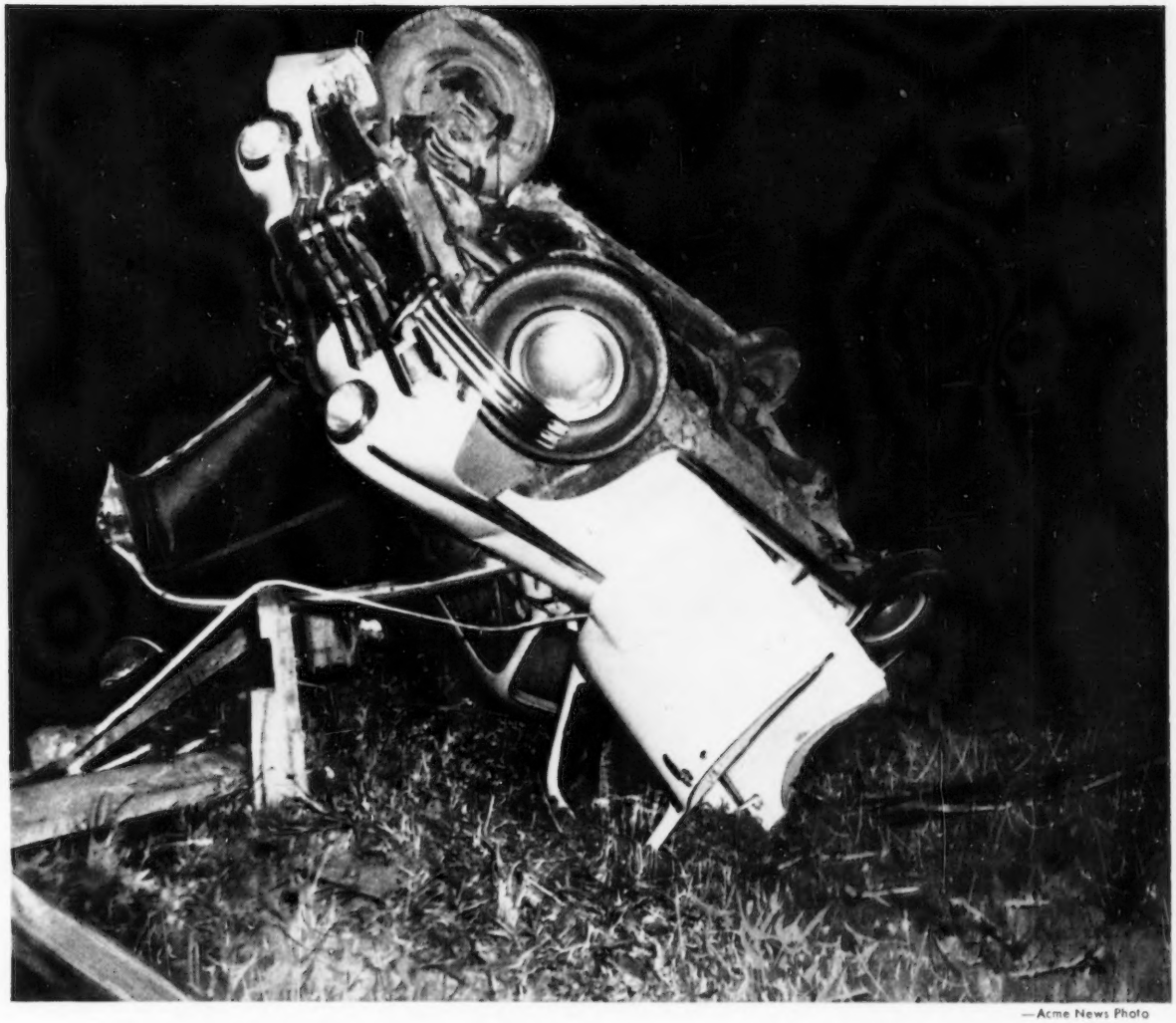
2—DEPENDABILITY . . . Preshrunk Hy-Lites are compressed. There's far less contraction and expansion under severe temperature changes.

3—LESS MAINTENANCE . . . The water-polished granite finish cuts maintenance to practically nothing. And graceful Hy-Lites keep their attractive finish for years.

It's easy to see why Hy-Lite *prestressed* Spun-Crete Standards are gaining wide recognition. Hy-Lite advantages can mean better, modern outdoor lighting for your community, too. Write for full details to the American Concrete Corporation, 5092 North Kimberly Avenue, Chicago 30, Illinois.

American Concrete

CENTRIFUGALLY SPUN-GRANITE CONCRETE LIGHTING STANDARDS



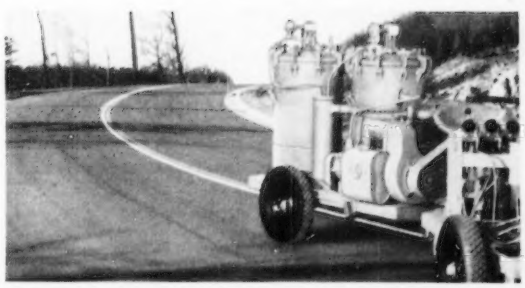
—Acme News Photo

"CENTERLITE" Reflective Compound helps prevent nighttime accidents!

KEEP YOUR HIGHWAYS SAFE... specify Centerlite compound for your centerlines. Unmatched for nighttime visibility. Meets the toughest durability requirements. Try 100 gallons of this pre-mixed material (enough to mark 10 miles of standard broken line). You'll prove to yourself that "Centerlite" compound *costs less per mile per month of useful life*. Get full details from your 3M representative.

Reg. U.S. Pat. Off.

CENTERLITE
BRAND
REFLECTIVE COMPOUND



APPLY with standard equipment... in one easy operation! "Centerlite" Compound flows on smoothly, effortlessly. Won't clog applicator.

Made in U.S.A. by Minnesota Mining and Mfg. Co., St. Paul 6, Minn.—also makers of "Scotch" Brand Pressure-Sensitive Tapes, "Scotch" Sound Recording Tape, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-slip Surfacing, "3M" Abrasives, "3M" Adhesives. General Export: 122 E. 42nd St., New York 17, N. Y. In Canada: London, Ont., Can.

REFLECTORIZED CUTOUT LETTERS NOW AVAILABLE...

A G A offers weatherproof STIMSONITE reflectorized individual letters and digits for making signs without costly production equipment. Here are brief details:

- Embossed letters, durably finished, preassembled with STIMSONITE reflectors
- Complete alphabets, with arrow accessories, ranging in letter height from 6″ to 24″
- Designed for maximum day and night legibility

Consider these direct advantages of detachable copy:

1. **Change of message whenever necessary**
2. **Simple correction of spacing errors**
3. **Economical field repairs and maintenance**
4. **Reuse of copy for temporary signing**

Typical installation

WRITE for further information. We'll include spacing information and details on STIMSONITE'S superior lifetime reflectorization.

STIMSONITE® *for* — *Seeability* / *Readability* / *Durability*

AGA DIVISION

ELASTIC STOP NUT CORPORATION OF AMERICA
1027 NEWARK AVENUE, ELIZABETH 3, NEW JERSEY

since they don't
build them
this way...

we build 'em like this

"Mythological Miracle Cops" *might solve* today's problems of congested intersections, but Electro-Matic Controllers *can most surely solve* them both for today and tomorrow.

Traffic engineers and police officers the country over rely on "Electronic Brains" to expedite traffic flow more efficiently than by *any other method.*

Electro-Matic Controllers, operating *without* volumetric limitations, continually adjust to the ever changing patterns of traffic volume thereby clearing intersections faster.

Policemen, previously pressed into traffic duty, can now be utilized to better advantage. Thus, the aims of efficiency and economy are *both* realized.

Electro-Matic Controllers are designed to cope with *your* most difficult intersections. *For details, write for further information.*

TRAFFIC ACTUATED

AUTOMATIC SIGNAL
DIVISION
EASTERN INDUSTRIES, INC.
NORWALK • CONNECTICUT

Ham on Rye or Rye on Hand?

Count BOTH

(and 1,001 Other Items)

with this New Veeder-Root

VARY-TALLY

Multiple-Unit Reset Counter

Knowing how many apple versus lemon pies, for instance, are ordered on a given day . . . or how many cases of what are in the cellar . . . helps a restaurant *count*rol, make plans, make profits. The same goes for a manufacturer or wholesaler seeking tighter inventory control . . . or for any of the following:

- Traffic Engineers
- Schools and Colleges
- Nurserymen and Florists
- State Park and Forest Services
- Laboratories
- Milk Plants and Ice Cream Processors
- Researchers
- Industrial Plants
- Textile Mills
- Inspection and Quality Control
- Jobbers, Wholesalers, Distributors
- Restaurants and Hotels
- Mail and Phone Order Departments
- Laundries and Linen Supply Houses
- Manufacturers of equipment for:
  - Order Control
  - Stock Control
  - Inventory Control
  - Traffic Control
  - Sales and Market Analysis
  - Laboratory Analysis
  - Payroll Preparation
- and What Do You Want to Count?

Arranged compactly on stands in tiers, the Vary-Tally can be supplied in any of 66 combinations, up to 6 banks high and 12 units wide, with a minimum of 2 units wide. Write for news sheet and prices.

"The Name that Counts"

VEEDER-ROOT INC.

HARTFORD 2, CONNECTICUT

Chicago 6, Ill. • New York 19, N. Y. • Greenville, S. C. • Montreal 2, Canada • Dundee, Scotland • Offices and Agents in Principal Cities

Traffic Engineering

OFFICIAL PUBLICATION OF THE INSTITUTE OF TRAFFIC ENGINEERS

VOLUME 24 | APRIL, 1954 | NUMBER 7

INSTITUTE OF TRAFFIC ENGINEERS

INSTITUTE OFFICERS

DONALD M. MCNEIL
President

HARRY PORTER, JR.
Vice-President

CHARLES W. PRISK
Vice-President

THEODORE M. MATSON
Secretary-Treasurer

•

DIRECTORS

JOSEPH HAVENNER
District Number 6

ROBERT S. HOLMES
District Number 2

CARL MCMONAGLE
District Number 3

PAUL RISTROPH
District Number 5

MATTHEW SIELSKI
District Number 4

EDWARD WETZEL
District Number 1

•

PUBLICATION STAFF

M. MANSFIELD TODD
Editor

S. G. NOWELL, JR.
Business Manager

Associate Technical Editors
ROBERT S. HOLMES, EDMUND R. RICKER
MARTIN C. STARK

Associate Editors

H. A. BARNES
H. M. BATTS, JR.
J. A. CARROTHERS
C. C. CLARK
R. H. HARLESTON, JR.
C. S. LECRAW, JR.
EUGENE MAIER
S. T. SIEGEL
NORMAN KENNEDY

COVER: This month's cover shows the "christening" ceremonies of the first installation of traffic actuated control. The Automatic Signal Division, Eastern Industries, Inc., supplied us with this photograph and the accompanying illustrations that are used in Mr. Henry Haugh's Annual Meeting Paper. Be sure to read in this issue, The Field of Modern Interconnected Traffic Control Signals. The insert photo of the street names was taken by Mr. E. A. Mueller, Yale Bureau of Highway Traffic.

Traffic Engineering is that phase of engineering which deals with the planning and geometric design of streets, highways, and abutting lands, and with traffic operation thereon, as their use is related to the safe, convenient, and economic transportation of persons and goods.

May We Offer . . .

The Car and the Road 233
Robert M. Moses

24th Annual ITE Meeting Papers
The Field of Modern Interconnected Traffic Control Signals 236
Henry A. Haugh, Jr.

Traffic Controls in the Vicinity of School Zones, Part 2 239
Lawrence Lawton

Traffic News 251

Letters to the Editor 253

New Appointments 253

Strictly Business 255

Shopping Center 258

Section News 259

Looking Ahead 260

Positions Available 261

Sustaining Organizations 262

Index to Advertisers 266

Yearbook Changes 267

Published Monthly by the

Institute of Traffic Engineers

PUBLICATION office:
Interstate Printing Corp.
400 Watchung Avenue
Plainfield, New Jersey

EDITORIAL AND ADVERTISING offices:
Strathcona Hall
New Haven 11, Connecticut

Entered as second-class matter November 7, 1941, at the Post Office at Plainfield, New Jersey, under Act of March 3, 1879. ¶Single copies 40 cents, subscription price $3.50 per year in the United States; $4.75 per year to foreign countries. Other publications of the **Institute of Traffic Engineers** include Annual Proceedings, Traffic Engineering Handbook and Technical Bulletins. ¶**The Institute is not responsible for any statements made or opinions expressed in its publications. Publication of advertising does not constitute Institute approval or endorsement of the products or services advertised.** Permission to reprint contents with customary credit line is given unless otherwise stated.

For New York...

12,000 DUALS!

For the largest or smallest city, from coast to coast, North to South, for all climates—DUALS are *your* best bet for year in, year out economy and complete satisfaction.

For detailed information on SINGLE or DUBL-DUAL Parking Meters for on-street or off-street service—write *The Dual Parking Meter Company* (subsidiary of The Union Metal Manufacturing Co.), *Canton 2, Ohio.*

DUAL the Oriqinal...

the Friendly **PARKING METER**

Frankly Speaking

FOR OUR "MIDYEAR" THEME, we would like to direct the attention of members of the profession to the 1954 objective of the Institute of Traffic Engineers as outlined by President Donald M. McNeil on this editorial page in the October, 1953 issue. The progress and development of the organization since the "lean" years of World War II have been astounding. Since it is a well known fact that the individual membership and more specifically, *Local Sections*, are the backbone of any organization, we can attribute this remarkable expansion to the activation of new local sections.

To emphasize this point and serve as the *theme* for this Editorial, let us review Article V, Section 2, of the Institute's Constitution, which reads as follows:

> *"The functions of Sections should be the furtherance of the objects of the* INSTITUTE, *the fostering of closer association of* INSTITUTE *members in the area or locality, the encouragement of members to prepare or discuss papers, to confer and suggest as to matters of policy, to study traffic engineering problems in that area or locality, to cooperate with other engineering groups in that area or locality on matters of common interest and to encourage the introduction of traffic engineering instruction in technical schools in the area or locality.*

In a two and one-half year period immediately following the conclusion of World War II, seven local sections were activated. There followed a three year "recession" period in which these sections were consolidated and the tempo of increased membership was getting under way. Just three years ago this month, the impetus of new local section activation was begun by the simultaneous authorization of the Canadian and Missouri Valley sections. Shortly thereafter, the Indiana section was authorized. The past year has seen the activation of a new regional area section, the Southern section (absorbing the former Florida section) and a Texas section. Except for a handful of states, the Institute now has representation in every geographical area of the United States. It is anticipated that other large membership population states such as Minnesota, Ohio and Pennsylvania, will soon join the growing list of new local sections.

It would behoove all members of the *Institute* to watch closely the development and expansion of the newest area in which a section has been activated—the Southern section, encompassing twelve southern states. There was considerable doubt raised in the minds of the organizing group due to the wide geographical spread and the fact that the section would largely be considered a "paper" Section for many years to come. We need only look to the remarkable development of the Western section to offset this philosophy.

The Western section was organized on December 4, 1946, and since that time has more than doubled in membership, to become the largest I.T.E. Section in the United States. This remarkable achievement was made possible by a group of determined officers and the establishment of the "Westernite bulletin." There followed the development of area groups to form key nuclei "to study traffic engineering problems in that area or locality, and to cooperate with other engineering groups in that area or locality on matters of common interest." By 1950, the Western section had grown to such an extent that their Annual Meeting, attended by more than 150 persons, was second to the annual meeting of the parent organization only in size. The spirit, enthusiasm, subject matter and entertainment features were identical.

Although I was not in attendance at the First Annual Meeting of the Southern section at Louisville, Kentucky, on March 8th, I understand that it was an outstanding success and well attended by approximately 40 of the 81 eligible members in the Southern section area. This local section seems to have grasped the enthusiasm of other sections and should prove as successful in expansion at the Western and other sections. The Texas section covering an area "almost as large" as the Southern section, should be equally capable of rapid expansion.

The activation of new *Local Sections* and their continued cooperation with the parent organization should go far towards reaching the goal of 1,000 new members established by the Institute's Committee on New Members—a goal entirely dependent on the activities of each local section for achievement.

Let us all put our shoulders to the wheel and make the 1953-1954 Institute Year the greatest "advancement" year in the history of the *Institute* through the activation of new *Local Sections*, increased membership, participation on technical committees, professional attainment and the encouragement of traffic engineering instruction in technical schools throughout the Country.

Robert S. Holmes

Director

The Car and The Road

By Robert M. Moses

City Park Commissioner, New York City, New York

Our first feature this month has been provided by the ever-versatile Bob Moses. He presented this address to the Detroit Economic Club, Detroit, Michigan, December 14, 1953. Among his many titles and tasks is a recently acquired one: last month Governor Thomas E. Dewey named Mr. Moses chairman, New York State Power Authority. This too, is another one of his many non-paying undertakings. His job will be to wage the battle for state development of available power potential at Niagara.

He is also New York City's Construction Coordinator, City Park Commissioner (his only paid job), Triborough Bridge and Tunnel Authority Chairman, Long Island Commissioner, and City Planning Commissioner.—EDITOR.

DETROIT IS THE HUB of the motor universe. There are two possible threats to its prosperity and that of the whole midwestern motor world—the first is a recession in which it is difficult to sell cars. This would curtail production, and put many one-industry workers on the streets. Anything which adversely affects the auto industry, throws hundreds of other related industries out of gear. As goes the auto industry, so goes all business. The second threat, and a much more immediate one, is aggravation of the present deplorable road and parking shortages. This in the long run has the same effect as a recession, because you can't sell cars if there is no place for their smooth and uninterrupted operation.

At long last we are beginning to see a change in sentiment about the dependency of the car on the road, and a glimmer of recognition of the urgency of neglected road building. The simple truth is that in modern highway construction we are over ten years behind the output of cars and are steadily losing ground. It will take fifty billion dollars in the next ten years just to catch up, and there will still be problems then, but we shall at least be out of the mud and the blockade. Our task is unmistakable. There is no escape from it. We must get to work and pay the bill.

FRONTISPIECE

Looking Westward along Santa Ana-Hollywood Freeway through the Los Angeles Civic Center area. Foreground shows heavy traffic using detour around site for Alameda grade separation under construction. *Courtesy, California Highways and Public Works*

Let us dispose first of the so-called competitors of the highway. I am sure you will realize that I speak without disparagement of the railroad, which is still indispensable in many contexts, of the plane which has had so phenomenal a rise and has vast horizons still before it, and of the ship in the trackless waters inland and on the littoral.

The railroad is and should always be a respected competitor for distance passengers as well as freight. It will no doubt increasingly carry long-haul freight on its rails. The short distance train commuters, except those dependent on urban rapid transit, more and more use buses and car pools.

The canal and river have long since ceased to be serious contenders against the highway. In the air we must have the gift of prophecy or resort to mere guesswork to foretell the future. Flying passengers, however they may increase, are no important competitors of the car and road. Air freight is, and is likely to be, closely confined. Helicopters, too, have only limited usefulness. Measure them as you will, by mileage, by number of vehicles, passengers, and freight, by fuel consumption, by employment direct and indirect, by investment, the car and road are supreme factors in domestic transportation, and their competitors, however growing, important and indispensable, are not likely in the foreseeable future to reduce their claims upon us.

Let me turn now to other questions. I am a practical man and have no patience with quarrels over words, prejudices, dogmas and slogans which insist upon exclusive federal, state or local responsibility, uniform methods and financing throughout the nation, segregation of revenues, pay-as-you-go financing, opposition to authorities and tolls, retirement of the federal government from the road building field, by-passing cities, etc.

Next to complete decentralization and fragmentation of highway building the stupidest misconception we can harbor is that all states should have an identical formula of administration and financing. The country is too big and diverse for that. We must have direction and a common purpose, but not regimentation.

Let's have less chatter about diversion. There are, to be sure, good arguments against it, but segregation of all car user revenues by itself is no cure-all. Most anti-diversionists say very little about expenditures out of general or other funds for ordinary streets, right of way acquisition, relocation of tenants, traffic police and courts, public parking facilities, railroad grade eliminations and other hidden items which in the aggregate would make a great big dent in user funds if they had all to be paid from this one source.

As to the pay-as-you-go fetish, the sooner we realize that borrowing and capitalizing future revenues are just as legitimate in permanent expressway construction as in the building of automobile factories, the sooner we shall be on the way to rapid progress in narrowing the gap between car and road.

The projected fifty billion dollar ten-year program, which looks huge at first glance and staggers small minds is, in fact, a modest minimum. The public must be induced to bring the picture into focus and scale. It must begin to understand the crucial place of the car in our daily lives, the investment of this industry and its many ramifications in men, management and money. The screen must be wide and deep. The audience must participate. The spectacle must be presented with every legitimate device and art known to publicity. Even then there will be no genuine, dependable response unless the producers stop quarreling among themselves, subordinate their preconceived ideas and their pride of authorship, and concentrate on one common aim.

The greatest harm done to this program so far has been the drive by selfish, narrow, parochial minds to return the entire subject to the states and municipalities, to get the national government out of the picture entirely and to assume that federal aid, advice, coordination and leadership are superfluous, that forty-eight states and thousands of municipalities can go it alone, in fact, that there is virtue and economy in disintegration.

Recently we have seen United States Senators and Governors from certain large, wealthy states pleading for the retirement of the federal government from road building and for the repeal of federal gas taxes, on the absurd assumption that all states will impose additional equivalent taxes and be better off on their own. This conclusion is arrived at by trick arithmetic. These people figure what the federal government collects in the wealthiest states, and what it returns. The difference represents profit to these states, and to hell with the rest of the country.

What states will in fact impose the taxes relinquished by Washington? Surely more than half the states will not. There will be less road money. There will be no leadership and no nationwide system.

A member of the new Hoover Commission, by no means its star, calls the federal aid system "brokerage," by which he means that all the United States Government has done to promote good roads represents collecting money, combing off a brokerage fee and returning the balance to the States. There you have a brilliant contributor to national economics!

Consider now another genial contributor, in this case a representative of the Automobile Manufacturers Association testifying before the House of Representatives Committee on Public Works. In addition to deliberately playing down the important part of Public Authorities in road construction, he urged the repeal of all federal excise taxes on cars, tires, gas and oil. He mixed the normal user taxes on gas and oil with the sales taxes on new cars, tires and accessories. Will such logic produce unity and progress, or is its purpose just to throw monkey wrenches into the gears?

The conflicting views of our statesmen, newly hatched specialists, and self-confident pundits, each claiming to represent the true faith, does not end here. If you want to become really dizzy, have a look at the so-called Depression Public Works Shelf on which are stored the blueprints of emergency construction. While one commission on Federal and State relationships busily denouncing federal aid of every kind and some members of Mr. Hoover's new reorganization commission are whistling the same tune, another commission, equally official, important, advertised and celebrated, is preparing federal plans and support of a great nationwide public works program to sustain industry, provide jobs, prime the pump, etc., when the first sure signs of an economic recession are noted. If this confusion becomes more confounded, we may before long expect a return to the stale, futile policy of deliberately postponing immediately needed highways and other improvements until we have a full scale depression and having the work done by relief crews with long handled shovels and bags of cinders.

Let me now refer briefly to street parking. The current nation-wide defeatist attitude toward urban street congestion is getting pathological. It will last and get worse until people generally get into the mood to let someone lift them out of their misery. Whether you think of Detroit, Chicago or New York, Los Angeles or Miami, there is no city traffic problem which cannot be largely solved, except at extraordinary peak hours, by simply giving adequate power and undeviating support to one official with guts, allowing him two years to do it and keeping the yapping critics, selfish interests and trembling politicians off his neck during this interval. Above all, it will be essential to ward off those outwardly virtuous citizens, the whited sepulchers, who heartily endorse the principle but object to its application.

Certainly the remedies will be drastic and there will be loud cries for the head of the martyr who undertakes this chore. Every big city will, however, get around to such a conclusion before long. Palliatives, compromises and inoffensive tricks simply won't work. This is no job for diplomatic protocol boys.

Here in Detroit, because you are at the very heart of the automobile world, because its health is vital to you, we should be able to look for leadership in the solution of the road problem. Leadership is not easy to achieve. You can't obtain it by mere assertion. Our vaunted democracy with its deadly levelling, its descent to the lowest common denominator, its silly pretense that all people are the same size, is lacking in both vision and command. All about us spreads the cankering doubt whether the voice of the people is indeed the voice of God, and growing comprehension of the fact that it is representative government and genuine leadership in business, labor and other fields of human endeavor, not mob rule, which alone can make democracy work.

I speak to you today not merely as economists, editors, business and professional men, representatives of labor and industry, and local civic leaders. This problem of a modern highway system transcends the city and the region. It involves the entire nation because it is only our solidarity on this Continent which can protect us and make our vaunted republic respected overseas. We must have one nation here before we can have one world. Whatever may be said of our proper role in international affairs, we should certainly be able to agree that if we are not united at home, we have no chance abroad. A far-flung continental network of modern highways, nationally planned and aided and consistent with states rights and municipal home rule, is a strategic necessity in the military as well as the civilian sense, and from the social as well as the economic point of view. This is what our motto "e pluribus unum" means in terms of motor transportation.

The barriers which prevent or hinder the free passage of men, goods and ideas must fall. And let us not in the process worry too much about our cherished, regional peculiarities. There will still be plenty of them remaining, from hide-minded suspicion of strangers to pride of native inflection, twang, drawl and accent. It's a big country and from the air we are puzzled as to whether to wonder more at the spreading cities and villages or at the vast open spaces still remaining between them. It is the highway which penetrates the bayous, mesas, tobacco roads, mill towns, and the pockets in the hills, mountains and valleys where strange prejudices and customs flourish because there are no means of easy travel to break them down.

Great forces are moving mankind over the whole globe —fascism, democracy, communism, intolerable pressure on the colonial white man under his tropical burden, awakening of hungry masses in the East, widespread racial mixtures, dispersion of wealth, the second industrial revolution, atomic fission, prolongation of life and insistent demands for food and a decent livelihood for increasing populations. Our great task here is to dissolve our domestic differences and to demonstrate that the dreams of world reformers are the achieved realities of American life.

What's silly about an all out effort to grasp the significance of these great events in terms of contemporary human beings? We must strip down superficially different people to their common humanity. We must show that human atoms are basically much the same, but in a variety of arrangements, and that the impact of new ideas in a free country can split them and release endless streams of energy no doubt hard to control but capable of vast future service.

Highway congestion and street congestion are two of our nation's greatest "growing pains." The above photo of the ever common "snail's pace" may someday be non-existent due to a planned highway program to benefit the Road User.

Probably most of you have read that wonderful address of Robert Louis Stevenson to the Samoan Chiefs on the Opening of their Road of Gratitude way back in 1894. In our road building fraternity it deserves to be quoted again and again and should be almost a ritual. It is couched in simple language as befits great thoughts:

"I will tell you, chiefs, that when I saw you working on that road, my heart grew warm; not with gratitude only, but with hope. It seemed to me that I read the promise of something good for Samoa; it seemed to me, as I looked at you, that you were a company of warriors in a battle, fighting for the defense of our common country against all aggression. For there is a time to fight, and a time to dig. You Samoans may fight, you may conquer twenty times and thirty times, and all will be in vain. There is but one way to defend Samoa. Hear it before it is too late . . . Now is the time the messenger is come into your villages to summon you; the man is come with the measuring rod; the fire is lighted in which you shall be tried; whether you are gold or dross. Now is the time for the true champions of Samoa to stand forth. And who is the true champion of Samoa? It is not the man who blackens his face, and cuts down trees, and kills pigs and wounded men. It is the man who makes roads, who plants food trees, who gathers harvests, and is a profitable servant before the Lord, using and improving that great talent that has been given him in trust. That is the brave soldier; that is the true champion; because all things in a country hang together like the links of the anchor cable, one by another: but the anchor itself is industry.

". . . Chiefs! On this road that you have made many feet shall follow. The Romans were the bravest and greatest of people! Mighty men of their hands, glorious fighters and conquerors. To this day in Europe you may go through parts of the country where all is marsh and bush, and perhaps after struggling through a thicket, you shall come forth upon an ancient road, solid and useful as the day it was made. You shall see men and women bearing their burdens along that even way, and you may tell yourself that it was built for them perhaps fifteen hundred years before—perhaps before the coming of Christ—by the Romans. And the people still remember and bless them for that convenience, and say to one another, that as the Romans were the bravest men to fight, so they were the best at building roads.

"Chiefs! Our road is not built to last a thousand years, yet in a sense it is. When a road is once built, it is a strange thing how it collects traffic, how every year as it goes on, more and more people are found to walk thereon, and others are raised up to repair and perpetuate it, and keep it alive; so that perhaps even this road of ours may, from reparation to reparation, continue to exist and be useful hundreds and hundreds of years after we are mingled in the dust. And it is my hope that our far-away descendants may remember and bless those who laboured for them today."

Let me sum up now and conclude: Gentlemen, communication is the great unifier, and high on the list of its instruments, more vital even than the amplification and transmittal of the human voice and presence by air, light and print, is the road and the wheel which turns and depends on it. You managers and men are the makers of the wheel in all of its manifestations.

I do not have to sing for my luncheon, and shall therefore spare you the harmless buttering up of regional and personal compliments which ordinarily grace such occasions. When I say you here in the midwest are the backbone of the country I mean it in the geographical, the physical, the industrial and the much more subtle spiritual sense. You lead in cars. You should also provide leadership in roads.

It is of little use to put your shoulders to the wheel if you have not made the good roads which will insure momentum. You are late in discerning this simple truth. The manufacturers of the car have thus far left the task of highway building to others. The time has come for us to work together to integrate this nation. Now is the time, as Stevenson said, for the true champions to stand forth.

24th Annual ITE Meeting Paper

No. 9, Presented at the Fourth Technical Session which was devoted to the subject, Administration, Thursday October 1, 1953

The Field of Modern Interconnected Traffic Control Signals

By Henry A. Haugh, Jr.
Technical Sales Engineer
Automatic Signal Division
Norwalk, Connecticut

TO BEGIN AT THE BEGINNING, I would like to ask you to take a little trip back through the years to an evening in 1926. We are driving up Chapel Street in New Haven headed for home. Just as we reach College Street the signal turns red. There is no traffic on College Street, the cross street. So we sit there for no good reason except the ultimate in protection provided at the expense of expediency. A thoroughly safe procedure but really unnecessary under the circumstances.

We get to thinking how much better it would be if the signal could know that we are waiting on Chapel Street, that nobody is waiting on College Street, and would rearrange its affairs to let us go happily on our way without delay. In fact it should not have stopped us in the first place.

Surely motorists are eventually going to be freed from such harassment and frustration. Let's hurry that day by trying our hand at devising a traffic control to flash its signals green and red in a cycle fitted by the traffic to its own pattern.

Such a radical departure from established practice calls for an entirely new type of control under which the traffic itself will control the signal operation.

Obviously this would require some sort of a detector in each of the approaches to an intersection. These detectors might be any one of several types such as a mechanical gimmik, a magnetically operated unit responsive to the presence of the magnetic material in a car, or they might be in the nature of a light beam to be interrupted by an approaching car.

For the present let us assume that we have a detector of some type in each approach.

Let's attack the problem from a functional angle, assuming that equipment can be made to carry out whatever functions we decide should be incorporated.

For the sake of simplicity, assume that our brand new system is functioning and that in response to traffic demands, the signal has just turned green in A Street. The immediate problem is to assure enough A Street green light time, within reason, to permit its traffic to pass through the intersection. Let's enlist for this job a couple of amiable characters whom we might call Tommy Traffic and Tillie Time.

Tommy's job might be to make sure that A Street traffic gets enough green light time. Tillie Time's task could be to insure that A Street traffic does not get the green light beyond its need.

Tommy Traffic and Tillie Time will now run a race—TRAFFIC AGAINST TIME—to time the A Street green signal. Tillie chases Tommy. When she catches him the A Street green light period ends.

This will be an odd sort of race in which Tommy Traffic, instead of running, advances by jumps. He starts from a position a couple of jumps ahead of Tillie in order to provide an A Street minimum green signal period. Now every time an A Street car crosses his detector Tommy jumps farther ahead by a fixed distance such as 10 ft. The more cars the farther he jumps.

Tillie Time, on the other hand, waits and watches for the A Street green signal. Immediately when it comes on she takes off at a steady lope to overtake Tommy and put an end to this A Street green period. Now Tillie is not easily flustered and runs along at a steady pace regardless of Tommy's jump antics. She probably knows that the tortoise caught up with the hare anyway and figures that she ought to have as good a chance as any tortoise. Tillie, upon catching Tommy, tags him out. Thereupon the green light is transferred, after a suitable A Street clearance interval, to B Street.

Now if few cars cross the A Street detectors, Tommy will jump only a few times and stop. Tommy not being far ahead, Tillie will catch up with him in short order and so hold the A Street green light to a short period. If more traffic had made Tommy take more jumps, Tillie would have taken longer to catch him. Consequently the A Street green light period would have been longer.

Now Tommy will go all out to do a good job for A Street. So in order to prevent him from unduly extending the A Street green signal under pressure from heavy A Street traffic, we will have to put a barrier in his path to limit him to some specific number of jumps such as 10. When he reaches this barrier, Tommy has to stop regardless of A Street traffic urgings to jump on and on. Now Tillie Time can catch him. The barrier thus serves to limit the green light time on A Street to a reasonable amount; in other words, to provide what is today called the "Maximum Interval" or in some equipment the "Extension Limit."

We should also tell Tillie Time to make sure that there is traffic on B Street before actually tagging Tommy. If Tillie sees no cars on B Street she is to stand behind Tommy ready to tag him when B Street traffic shows up. Thus the green light will stay on A Street until a car approaches on B Street. Tillie, seeing the car, will tag Tommy, and start the clearance interval prepara-

tory to switching the green light to B Street.

As soon as the green light goes to B Street both A Street Tommy Traffic and A Street Tillie Time will immediately rush back to their respective starting points and get set for the next race to start when the green light returns to A Street. Tillie Time takes her position at the very beginning of the course. Tommy Traffic, as usual, takes his starting position a couple of jumps ahead of Tillie. The green light is now on B Street and another Tommy Traffic and another Tillie Time will run a similar race, to measure a B Street green period commensurate with its requirements.

Both Tillie Times should be instructed to always tag their own Tommy Traffic out as soon as they catch him if Tommy Traffic on the other street was hanging over the barrier when his green light was taken away. This instruction has common sense behind it inasmuch as some car was probably caught by the red light on the other street since Tommy Traffic thereon couldn't jump over the barrier to give it enough time to get through the intersection. This behavior on Tillie Time's part will provide what is nowadays called an "Automatic Recall" when the right-of-way is yielded at the end of a maximum period or at the end of an extension limit period.

Tommy's and Tillie's cooperation as described provides a system under which the green signal will remain on either street until it is called to the other. Furthermore, heavy traffic on either street produces a longer green light period thereon, reasonably limited in the presence of traffic on the cross street.

So far so good. Let's mull this thing over a little more. In the process it occurs to us that a closely knit group of cars would need less time to enter the intersection than the same number arriving at random. But Tommy is unaware of this fact and, being set in his ways, insists upon jumping 100 ft. for 10 cars regardless of how they come along.

Suppose we change our plan and let Tillie Time run the race all by herself. As before, she can start when the light goes green. When she reaches the tape at the end of the course the green light period is terminated. With a course of the proper length, Tillie will time a reasonable minimum green signal period.

Of course this minimum should be extendable by traffic approaching the green signal. To accomplish this we might tie a rope around Tillie so arranged that if she is within ten feet of the finish line, every car coming into the green light will pull her back to the 10 ft. point. Until Tillie is in the last 10 ft. of her course the rope has no effect on her. However, if Tillie is 8 ft., or 6 ft., or 2 ft., or any other distance less than 10 ft. from the tape, she is pulled back to the 10 ft. point by every green light car. Nothing daunted she immediately starts out again.

Now a group of cars spaced less than Tillie's record for the last 10 ft. of her course, can keep pulling her back, thus extending the green light period to fit their need.

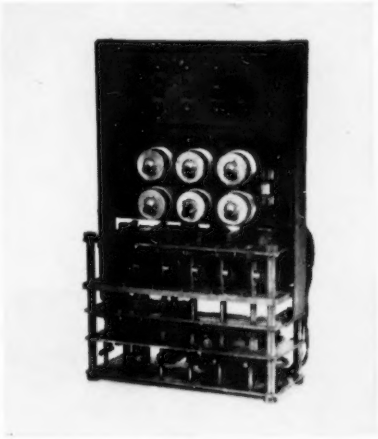


Fig. 1
Front view of original Orange and Humphrey Street full-actuated control. Six vertical timing spindles show in the lower center just below top shelf.

Our new plan eliminates the cumulative effect of piling up successive fixed intervals of time to the number of approaching cars whether or not such a long cumulative period is necessary, and substitutes therefore a short period sufficient for the last car crossing the detector to get through the intersection.

Of course if a steady stream of cars crosses the detector on the green light Tillie never will reach the tape to switch the green light.

To prevent such traffic from monopolizing the intersection we might add another character to our stable of racers. Tillie Time suggested that her brother Maximum might be useful for this purpose. We could give Maximum Time a separate course to run. He could start immediately upon seeing a car cross the detector in the other street and run his course at a steady rate. Thus if the green light traffic prevents Tillie from reaching her tape, Maximum Time will eventually switch the signals.

Of course all these thoughts did not come crowding to mind during the short time we were held up by the traffic signal at Chapel and College Streets. Subsequently however, the modes of operation as described here did materialize.

During the summer of 1927 a "Bread Board" model of a traffic actuated signal was set up in the Dunham Laboratory of Electrical Engineering in Yale. Resettable delayed action relays were obtained by dismantling control equipment not being used for instruction at the time. In its operation this model followed the "Tillie on the rope" plan. It was a full actuated two phase control which could and did operate in accordance with several systems.

Under one system the yellow signals would be shown on both streets in the absence of traffic. A car approaching on either street would call the green light which would be awarded on the basis of first come first served. Of course the green light on either street would be accompanied by a red light on the other street. In the absence of cross street traffic the minimum green light period could be extended indefinitely by cars crossing the green light street detector in close order. The presence of cross street traffic would limit such extension to a reasonable maximum. When all traffic cleared the signals would return to yellow all round, waiting for further business.

With traffic approaching on both streets the signal would alternate the green light from street to street, changing when the traffic using the green light died out or at the end of a maximum period if the green light traffic kept on coming.

When both streets carried heavy traffic the green light timing period in each street would run to a maximum thus causing the signal to operate very much like a fixed time control.

By turning a couple of switches the control could, in the absence of traffic, alternate the green light from street to street on a long time cycle very much like a fixed time control. However a car actuating the detector on the red light street would cause the control to immediately begin looking for a gap of sufficient length in the green light traffic to warrant switching the signal. If such a gap failed to materialize the signal would be switched at the end of a maximum period anyway.

Under another system of operation the control would normally alternate the green light from street to street on a

short cycle in the absence of traffic. Cars coming into the green light could extend the green light period to fit their needs up to a maximum.

This model was also capable of operating like the standard full actuated two phase control of today which leaves the green light displayed on the street to which it was last called until traffic approaches on the other street.

Or it could operate as a semi-actuated control with the green light normally displayed on the main street. Cross street cars could transfer the green light and hold it as long as needed with the usual maximum limit period. Upon returning to the main street the green light would remain for at least an artery minimum.

The reaction of the people who saw the Dunham Laboratory model in operation was varied. Some felt that it would be beneficial to traffic. Others thought it was an interesting gadget. One man expressed the opinion that it was a very complicated and expensive way to light a light.

In order to determine which school of thought was correct, a control was made up employing oil dash pot relays for timing. This control actually ran the signals at an intersection in accordance with the several outlined systems of operation, in order to determine which was best or indeed if any of them was any good. How else could we find out?

For test purposes temporary homemade pressure sensitive detectors were laid on top of the pavement.

Quite a crowd of people gathered to observe the first test. Some expected great things, others awaited a dismal flop. Fortunately the rear end collisions predicted by the latter group did not materialize.

The intersection where the tests were made was ordinarily controlled by a fixed time signal. A switch was arranged to transfer the signal from the fixed time control to the actuated and vice versa, in order to compare results. Traffic moved more freely and with greater efficiency under the actuated control than was the case when the signal was thrown back on the old control.

Among the several systems of operation possible with the actuated control, those which are today standard for the two phase full actuated control and for the two phase semi-actuated control, proved to be best.

A statistician, from the Connecticut Motor Vehicle Department, observing one of these tests on behalf of Commissioner Robins B. Stoeckel, had a column on his data sheet headed "waste car seconds." When the test was over this column was blank.

Subsequent to these tests, a full actuated control employing worm gear spindles for timing was designed. Some of you will doubtless remember these old controls wherein a mechanical key engaged the worm of a rotating spindle to begin the timing period, the end of which was reached when the spindle had risen sufficiently to open or close a contact at the top. The mechanical parts of this contraption were bathed in oil and anybody venturing a close inspection under operating conditions risked a petroleum shower bath. However, they did their jobs well until superseded by cam shaft electronically timed controls.

In the Spring of 1928 a full traffic actuated control with pressure sensitive detectors sunk into the pavement on each approach was installed at the intersection of Orange and Humphrey Streets in New Haven, Conn. This installation was officially put into service, with suitable ceremonies, on April 10th, 1928. It is still in service today although of course few of the original components now remain.

During the worm gear spindle control days, three and four phase actuated controls were developed and put into service at many intersections, the first of which was the intersection of Pennsylvania Avenue, Delaware Avenue and Van Buren Street in Wilmington, Delaware.

Fig. 2
Intersection of Pennsylvania, Delaware and Van Buren Streets, Wilmington, Delaware. One of the first cities to use full-actuated control.

Oddly enough this first three phase mechanical control had an overlap phase in it.

Interest around Wilmington ran high. Some people thought the gadget might do its job. Others thought it probably wouldn't. Still others doubted whether the darn thing would run at all. When the operation proved a success, thousands of dollars changed hands in Wilmington's moneyed circles.

The developments in individual actuated controls since those days are well enough known to traffic engineers to preclude the necessity for detailed presentation.

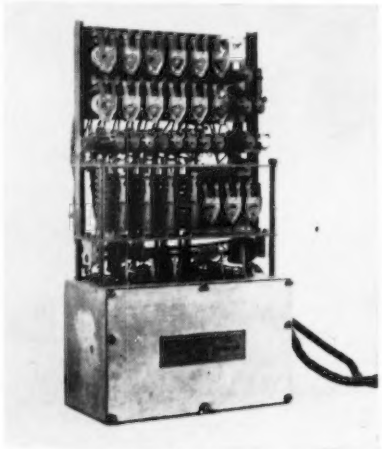


Fig. 3
Early 4 phase traffic actuated control used in Wilmington, Delaware, at Pennsylvania, Delaware and Van Buren Streets.

The controls which we have been discussing all operated after the fashion of Tillie Time with the rope who, as you will recall, was pulled back to the 10 ft. point by each car crossing her green light detector. Tillie's efficiency in handling traffic resulted in Tommy Traffic's relegation to the background.

When Tommy was retired he was only a little chap. Of course as time went on he grew up. As he grew up he became more and more restive. He figured he was too young to retire and furthermore the way Tillie was stealing the show irked him no end. One day a few years back Tommy discovered that growing up has its advantages. Whereas when he was a little tot he could see only what was transpiring at one intersection, now with his greater height he could see up and down the road quite a distance, his view encompassing many intersections.

Now it happened that along this road several independent Tillie Time type of traffic controls were operating. Tommy thought to himself "I'll bet with my extended vision and the more mature viewpoint which time has brought me, I could supervise the activities of all these Tillie Times in such a way as to increase their overall cooperation to keep traffic moving up and down the road with a minimum of interruption from cross street traffic." Apparently he

(Continued on page 245)

24th Annual ITE Meeting Paper

No. 9, Presented at the Fourth Technical Session which was devoted to the subject, Administration, Thursday, October 1, 1953

Traffic Controls in the Vicinity of School Zones

Part 2

By Lawrence Lawton (Assoc. Mem., ITE)
Director of Traffic Planning,
Department of Traffic,
City of New York

This paper has been prepared as part of the work of the committee on School Crossing Protection of Department No. 3. Members of the committee at the time this paper was prepared include: L. Lawton (chairman), O. K. Anderson, M. A Conner, R. S. Deetz, R. D. Dier, D. J. Hanson, G. W. Howie, L. Johnson, R. W. Kerslake, I. O. Kies, W. G. Klett, T. A. Wiley, and R. M. Wray.

School Traffic Signals

If signals are found to be necessary they should be on stop and go operation only when warranted by children crossing or by traffic conditions. Otherwise, drivers waiting at a red light will be tempted to disregard the signal, or at least develop contempt for traffic control at that point, if not in general. Therefore, at non-school crossing hours, the customary traffic engineering practice of having the signals flashing should be followed. The signals should operate as regular traffic lights on a schedule such as the following:

8-9:15 A.M., 11:30 A.M.-1:15 P.M., 2:45-3:15 P.M., Monday through Friday.

This can be done automatically by an electrically operated time clock placed in the signal controller housing. In the vacation months, the signal should either be on full time flashing operation or else covered by a canvas hood so that it may be turned off without giving the impression that it is out of order.

Push Button Signals

Push button operation may be used to advantage in some circumstances. One example might be an exclusive pedestrian crossing which has no cross vehicular traffic. Another would be a split session school where time clock operation would not be suitable.

There has been an effort in some instances to over simplify control at school crossing signals so that there is no mechanical control present. The lights are operated in sequence at the whim of the youngster or adult stationed there. Generally, this is a bad mistake and brings discredit upon the entire program of traffic control.

Push buttons should be used only with a standard controller and can be set up in the following manner. The push buttons are wired to a relay which keeps the circuit between the drum lock key and the solenoid normally open. This relay used in conjunction with an especially broken out cam on the cam shaft forms a memory circuit for calls on the push button. Then the fixed time sequence can be made to start only at the end of main street green on the dial. The signal will then have a background cycle which can be part of a progressive system. Also mischievous children will not cause confusion by frequently pushing the button.

Minimum Standards

Inadequate signal layouts should not be used in school crossings for reasons of economy. In urban areas at least two separately located signal heads should govern each approach to an intersection. Two signal faces are warranted for each vehicular approach to guard against lamp burnouts, and to insure better visibility.

School signals are essentially pedestrian signals. As a matter of fact the users cannot be expected to use adult judgment. The signals should be of even a higher standard then, than used at ordinary intersections. From the school plan, the engineer should determine which crosswalks are to be used. There should then be a signal face at the far side of each such crosswalk. It is expected that the use of neon WALK-DON'T WALK pedestrian signals will find increasing acceptance at school crossings.

Personnel at Crossings

There are two broad classifications of crossing personnel. Adults form the first group of which the most prominent and widely used type is the policeman. School boy patrols are the second and perhaps most important of crossing guards.

Except in unusual cases policemen or other adult guards should have the same essential function as a school signal. All of these means should be used only to create safe gaps in traffic where none would otherwise exist. Traffic officers in particular are not warranted to guard children against their own carelessness or to train them to cross safely; these are not police functions. The following discussion on the use of policemen is taken from the report of the Joint Committee of the International Association of Chiefs of Police and the Institute of Traffic Engineers which appeared in the 1947 I.T.E. Proceedings.

Policeman

"Educating the child in crossing streets safely is today usually begun by parents before the child goes to school. After he starts to school, parents have less and his schoolmates more influence on his behaviour. With proper direction by school and parents good habits develop; without follow up by the school some of the caution instilled by parents may be lost. What part should the police play in this? Many officers assigned to school crossings have a natural bent for training and do much good in teaching youngsters how to alert themselves when preparing to cross, to judge traffic and to cross properly. On the other hand, many well meaning but untrained officers ostentatiously stop vehicles and hurry the children across the street. If anything, this teaches the youngsters to watch the officer and run pellmell for the opposite curb when he gives the sign. Such 'training' is of no help when the children are where there are no officers and often counteracts the efforts of the school to teach children to watch for

Looking for help to control the
SPRING TRAFFIC DELUGE?
LOOK TO LYLE
FOR IMMEDIATE DELIVERY ON ANY OF 140 POPULAR TYPES OF TRAFFIC SIGNS
● The swelling flood of traffic would be impossible to control without every available traffic sign properly located and observed. Make sure your traffic sign requirements are met. Send for Lyle's detailed list of traffic signs and signals; you can get immediate delivery on any of 140 of the most popular types in use. Lyle signs conform to all federal and state specifications.
For 40 years, supplying the nation's sign needs
LYLE SIGNS, INC.
2720 University Ave. S.E.
MINNEAPOLIS 14, MINNESOTA

gaps in traffic and walk to the opposite curb.

"Few officers have had training in the educational principles involved in teaching behavior patterns and few school systems or police departments are inclined or equipped to give such training to intersection officers. Most police departments are not in a position to assign only specially trained men to school crossings but must send whoever is available. On the other hand, safety educators agree that pupils should be taught early how to cross streets safely and that schools are logical agencies to do this. It follows, therefore, that officers should not be assigned to school crossing for the purpose of teaching children to cross safely. This is presumably the responsibility of the school where there should be people especially equipped and trained for this kind of teaching.

"Guarding the child against his own carelessness by watching to see that he does not cross the street unaware of approaching vehicles, misjudge the gap in traffic, engage in distracting play when crossing, and become confused by situations which he had not anticipated can be done by police officers. But by no stretch of the imagination is it possible to visualize enough traffic officers to give protection of this kind to more than a minute proportion of children crossing intersections.

"In places where the authority of a policeman is felt necessary to secure obedience by children to the control of safety patrols, it must be assumed the direction of the patrols by the schools has not developed to the point that it has in most communities so that within the school itself has been built up the necessary discipline."

School Safety Patrol

It is the function of school safety patrols to instruct, direct, and control the members of the student body in crossing the streets and highways at or near schools. The patrols should also assist teachers and parents in the instruction of school children in safe practices in the use of streets and highways at all times and places.

Patrols should not be charged with the responsibility of directing vehicular traffic, nor should they be allowed to direct it. By no stretch of the imagination should police powers be delegated to school children. If this is allowed some confusion is inevitable as to the responsibility of both motorists and children.

Furthermore it is extremely bad training for school children. They should be taught never to place implicit faith in the driver. The safest way to cross a street is to do so only when vehicles can not possibly be in the crosswalk at the same time as the pedestrian. A child, or for that matter an adult, who relies on the driver slamming on the brakes may end up in a hospital bed or in a coffin.

The patrol member should stand on the curb and hold back the children until he sees a gap in traffic. When such a gap occurs he steps aside and motions for the children to cross the street in a group. He keeps his position on the curb except when his view of traffic is obstructed. In that event he may step into the street a maximum of three paces to obtain a clear view. After the children have crossed the patrol member should return to his station on the curb.

In setting up a successful operation of safety patrols school authorities should seek the cooperation of the local Automobile Club, Safety Council, Parents Association and other civic groups. The "Safety Patrol Handbook," published by the American Automobile Association in Washington, D. C., is an excellent guide in this endeavor.

Selection of Positive Control

As has been previously stated, positive control is usually warranted only when there is less than an average of one safe crossing gap per minute. It may be either a policeman, adult guard, or a traffic signal.

Policemen furnish ideal protection where positive control is indicated. They fulfill the demand that vehicles be stopped only when children are actually crossing. Officers are particularly valuable at intersections with very heavy turning movements. In addition, drivers obedience to officer control is universal. Unfortunately most police departments are undermanned and may be forced under the pressure of other duties to assign a school crossing officer elsewhere one or two days a week.

Where policemen are not available the auxiliary adult guard may successfully be employed. Their usefulness will depend on the caliber of the personnel selected and on a proper training program. They are less acceptable to drivers when their school duties are not

obvious or when the volume of traffic is exceptionally large.

Signals will be necessary when neither policeman or adult guards are available. School safety patrols should always be stationed at a signalized school crossing to help protect children against their own carelessness.

The decision on which type of control is to be used will depend on the conditions and practices prevailing in the local community. Also to be decided is for how few children shall control be provided. This whole question may well resolve itself into a determination of the cost of each type of control per student.

Signs

School crossing signs display perhaps the greatest range of design in a field noted for its lack of uniformity. They are in the shape of a diamond, or a rectangle or a silhouette of a child dressed in a police uniform. They may say school, school crossing, slow, danger-school, or in some cases school - stop. With this brief listing we have by no means exhausted the shapes and messages used.

It is desirable that a suitable sign have a symbol and a written message indicating a school crossing. It also should not be too wide to preclude its use on a portable stanchion without creating too great a hazard in the roadway.

The Uniform Manual classifies school signs as being in the "danger" classification and therefore recommends a diamond shape. However, most drivers associate this type of sign with a hazard he may be faced with. This is not the case when a conflict arises between a vehicle weighing several thousand pounds and a small child. In addition a school sign is pertinent only a relatively small percentage of time that the roadway is in use.

Now a diamond shape sign is well adapted to display a symbol. An excellent example is a curved arrow indicating a turn. Also a short message can be adequately taken care of in a diamond shape. Unfortunately this shape is not at all suited to a combination message and symbol. The identifying shape will of necessity be in the center, leaving only the small top and bottom triangles for the message.

In view of the above factors it will be seen that a long rectangular sign would be most suitable. The proposed sign would show a silhouette of a school boy. Thus, it would be quite similar to the sign that is perhaps the most widely used throughout the country. However, in place of the usual "School - Slow" our sign would read simply "School Crossing." Its size: 20″ x 30″; 3/8″ margin; 2: 4″ type "B"; Background yellow, 3/8″ border; Line 1: 5″ type "B"; Line legend and border black, standard alphabet, not reflectorized, Public Roads Administration.

Mounting

It is recommended that school crossing signs, when warranted, should be erected on the right side of the roadway, in advance of the school crossing, in accordance with the following distance limitations.

Speed Limits of 25 or 30 M.P.H.

Minimum distance from crossing 75 feet

Maximum distance from crossing 200 feet

Speed Limits of 35 M.P.H. or higher

Minimum distance from crossing 100 feet

Maximum distance from crossing 300 feet

This sign may be mounted on a portable stanchion. It should then only be used immediately adjacent to the school. The cooperation of business people located near the school, janitors, as well as the police should be solicited so that the stanchion be in the roadway only during school crossing time.

Speed Limits

Nowhere are speed limit signs more widely misused than in the case of school crossings. How many thousands of signs say "School - Slow" or "School-10 M.P.H." The great majority of such speed zones are only a few hundred feet in length. As such they are practically impossible to enforce and are universally violated.

It would be well to again state the basic axiom of school crossings. It is the responsibility of the child, aided by the school boy patrol, to select the proper gaps in traffic. If there is less than one safe gap per minute, it is the responsibility of the community to establish restrictive control to create adequate gaps. It is, therefore, recommended that no speed restrictions be established solely for school crossings.

Parking Restrictions

It is desirable that parking be prohibited in the immediate vicinity of schools. One good reason is to insure adequate visibility for children when crossing. Also children congregate in front of the school during morning arrival and afternoon dismissal. This is

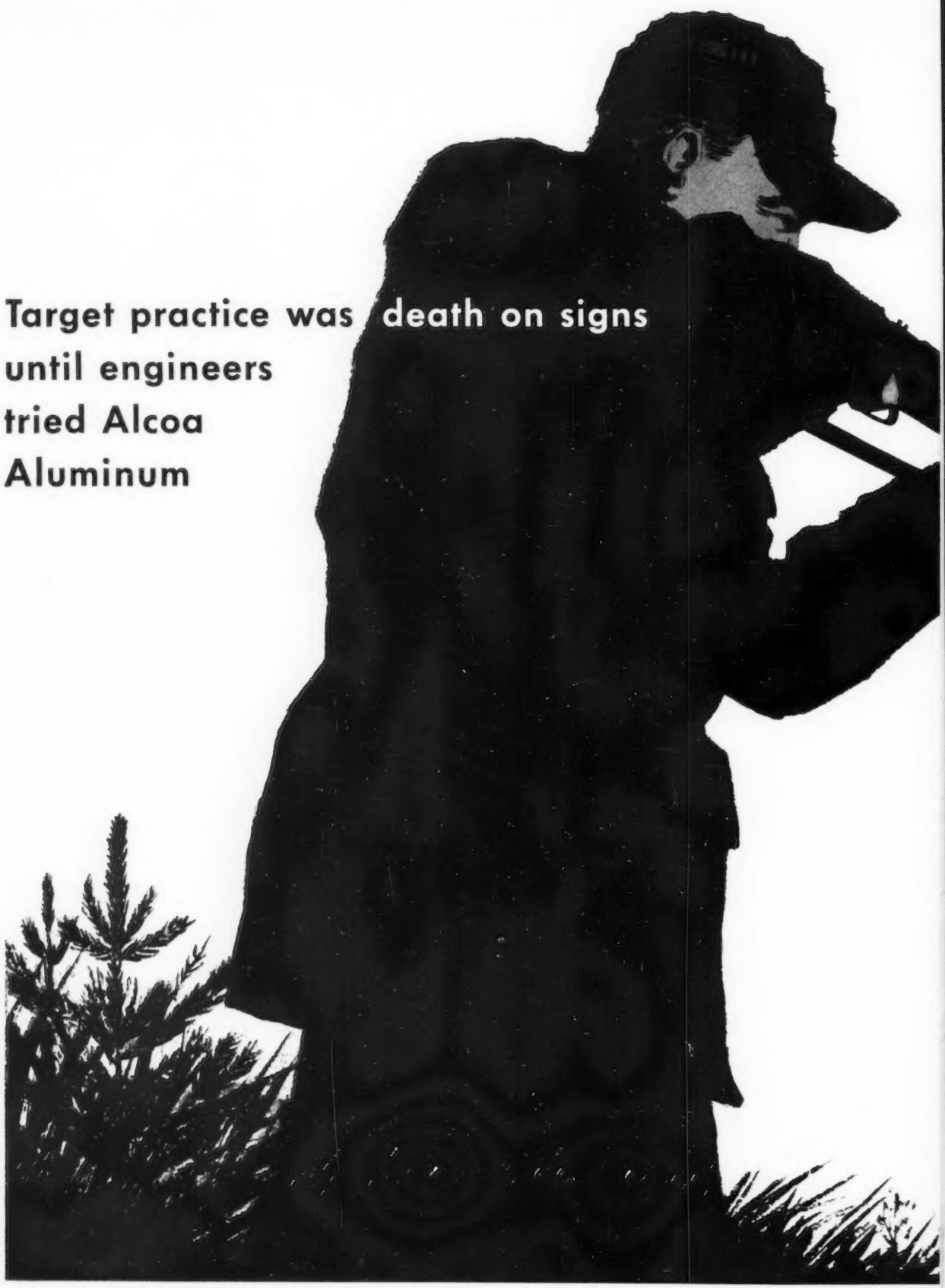
(Continued on page 244)

Catalite
REFLECTIVE
COMPOUND
✓ mileage proved
✓ dries in 6 minutes
✓ weather proofed

Catalite
REFLECTIVE
COMPOUND
(Beads and Paint)
PREMIX REFLECTIVE TRAFFIC PAINT AT ITS BEST . .
•
EASILY APPLIED
—no bead dispenser necessary

See your nearest CATAPHOTE dealer—or, write
Cataphote CORPORATION
TOLEDO 10, OHIO

Target practice was death on signs
until engineers
tried Alcoa
Aluminum



When rifle slugs tear through a steel highway sign, only prompt and costly repainting can save it. For, once the protective paint film is broken, rust spreads relentlessly to destroy legibility and eventually makes scrap of the sign, itself.

Traffic engineers in eighteen states have found the answer to vandalism that tapped their budgets for thousands of dollars every year and created a major threat to highway safety. It's Alcoa® Aluminum. Even when bullets expose bare metal, there's no deterioration, so repairs can wait while the sign stays on the job. Savings are realized, too, on handling and erection, because aluminum signs weigh only half as much as steel.

GET ALL THE FACTS

Alcoa, with recommendations backed by 66 years of experience, offers you expert counsel on alloys, fabrication and finishing for painted and reflectorized signs and markers, bridge railings, gratings, lighting standards, barricades and fencing. Get the details by calling your local Alcoa sales office. Or write: ALUMINUM COMPANY OF AMERICA, 1979-D Alcoa Building, Pittsburgh, 19, Pennsylvania.

ALCOA ALUMINUM

ALUMINUM COMPANY OF AMERICA

INTERSTATE RUBBER presents the TRAFFICONE SYSTEM of TRAFFIC CONTROL

WHY TRAFFICONE SYSTEM IS PREFERRED BY SAFETY MINDED TRAFFIC ENGINEERS

- 36-page Traffic Manual goes into every phase of traffic problems.
- Tested and approved through years of experience in the laboratory and in the field.
- Selected by traffic engineers for the toughest traffic control tests.
- Saves money by eliminating the rebuilding of old fashioned wood and wire markers.

FACTS ABOUT TRAFFICONES

- Two sizes
  28" — Barricade
  18" — Channel
- Colors
  Red, yellow, black.
- Lightweight and portable.
- Lane channeling set up in one-tenth the time required with wooden and wire markers.
- Require minimum storage space.
- They stack.
- Will not break or become distorted.
- Require less man and motive power.
- Reflectorized for night operation.
- Flexible rubber.

Guide the Motorist . . .
don't confuse him

Please write for complete information on how to increase the effectiveness of your traffic controls. 36-page manual and colorful literature available.

INTERSTATE RUBBER PRODUCTS CORP.
908 Avila Street
Los Angeles, California

TRAFFIC CONTROLS

(Continued from page 241)

particularly true during the lunch hour. They are sometimes, during the excitement of play, likely to dart past the curb. This again is a good reason to prohibit parking.

A parking regulation to be successful must be both enforced and be reasonable. The association with the school should be obvious and the regulation only be in force when needed. The posting of a sign saying "NO PARKING—8 A.M. TO 4 P.M.—SCHOOL DAYS" on the periphery of the school has been found to work quite well.

Crosswalk Markings

Traffic engineers would like to share the public's faith in painted crosswalks. It seems somehow that these two white lines mean the difference between safety and destruction. Would that this were so.

Crosswalks do however serve a limited function. At intersections with heavy turning movements they should be used to indicate the safest crossing. They also are of some help in stationing the school crossing patrol. To some degree, they also indicate to the driver that he is approaching a pedestrian crossing.

Crosswalks should ordinarily be limited to the block in which the school is located.

Setting Up a Program

There are three essentials of a successful school crossing program. The first of these is to set forth a firm and uniform approach. The traffic engineer, in cooperation with police and school authorities, should determine the proper policy to be followed in the use of signs, signals, markings and also in the stationing of crosswalk personnel.

Then the necessary information should be obtained for each school in regard to existing controls in use. It is important to know such things as distribution of pupils' homes, exact location of the school and the school gates that the children use.

Having received this information from the school the traffic engineer should determine what changes in control and personnel are necessary. He should then inform both school officials and parents of the proposed changes and indicate the correct route for the children to use coming and going to school.

It is a big job to set up a school plan for one school. To set up a program for all schools within a reasonable time is a tremendous undertaking for any traffic agency. Therefore, as much of the survey and drawing work as possible should be done within the school system itself. It is suggested that until the final plan is prepared that none of the exchanges of information pass directly between the individual schools and the traffic agency. Each time it should be transmitted through the head office of the local Board of Education. In the first place this procedure avoids a difficult handling problem by the traffic engineer who in most cases is woefully short of personnel. In addition, better results will be obtained because the material to the school principals comes from their head office and not from an outside city agency.

Suggested Procedure

One procedure which has proved most successful in the City of New York will now be described. The traffic engineer supplied sheets of tracing paper to the superintendent of schools. He in turn sent two of these sheets to each school principal. The principal was instructed to have drawn on the first sheet the streets and location of the school. Details of control devices, school entrances, bus stops, etc., were drawn on the second sheet. In most cases the actual drafting was done either by the shop or science teacher.

The two maps were then routed back to the traffic engineer. From the information shown on the second map his staff then determined the proper location of signs, crosswalks, etc. These were drawn on the first map. This drawing then became the official school traffic plan. One print of each was routed to the traffic painting and sign shops and to the school.

When this print was received, each principal held a conference with his teachers on its use. Each school child was then asked to describe in writing the proper route he should take from home to school and return. This was then taken home by the child to his parents for verification, approval, and the parents' signature. These signed statements were then returned to the teacher who kept them on file.

Conclusion

It is hoped that this report will help establish a sensible and uniform approach to the school crossing problem. It is certainly not an easy task to accomplish. But with patience, understanding, and humility the traffic engineer will be able to enlist the cooperation of both parents and school authorities. The safety of our school children demands no less than a maximum effort on the part of all concerned.

(Continued from page 238)

had in mind something in the nature of a progression.

Tommy won his point. His ability to jump was again put to use. This time he was provided with a course which he could cover from end to end in six jumps. Tommy was connected to a set of detectors placed in the artery which he called "sampling detectors." He would usually start his day's work in the first jumping position which he called "A". The six positions into which Tommy could successively jump were therefore called "A", "B", "C", "D", "E" and "F".

Now Tommy was taught how to count cars and also how to tell time. He was particularly trained to note the passage of a definite period of time such as six minutes. During a six minute period Tommy would count the cars that ran over his detector. At the end of the period Tommy would take stock and if traffic volume had been over a certain number, he would jump from position "A" to position "B".

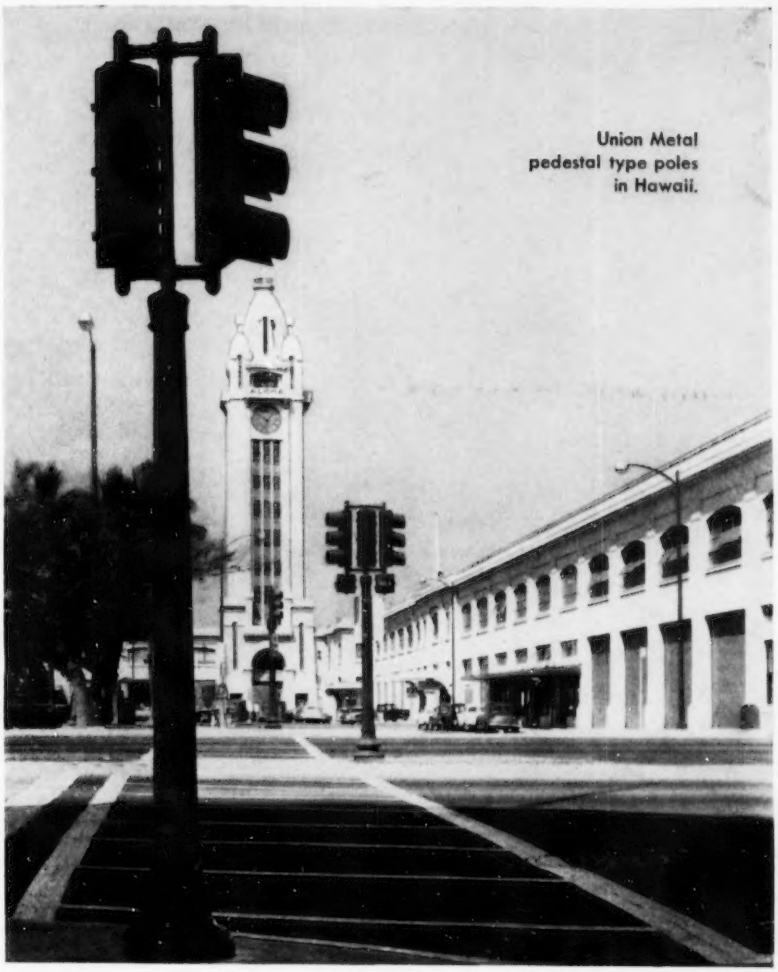
In position "B" Tommy would again begin to count cars for another six minute interval. If the count in this period indicated a marked increase in car volume he would jump on to position "C".

Now if Tommy had counted somewhat fewer cars than the number required to jump him into position "C" but still enough to keep him in position "B" he would have stayed there instead of jumping on to position "C". On the other hand if Tommy had counted very few cars at the end of the six minute period in position "B" he would decide that of course there was not enough to require him to jump to position "C", and really not enough to make him stay in position "B", so he would jump back to position "A".

From this we can see that Tommy's location would always be an indication of the current traffic density on the artery.

In order to put this information to use Tommy was instructed to push a button in each position as he jumped there. A separate button was provided for Tommy's use in each of the six positions, namely: "A", "B", "C", "D", "E" and "F". Now the cycle length for the whole system was made dependent on which button Tommy had last pushed. Naturally inasmuch as increasing traffic would cause Tommy to jump toward the "E" end of his course, the buttons

(Continued on page 250)



Union Metal pedestal type poles in Hawaii.

4 REASONS WHY
it pays to specify
UNION METAL SIGNAL POLES

UNION Metal tapered steel traffic signal poles offer four important advantages that truly add up to lasting satisfaction:

1. HIGH STRENGTH
2. LOW MAINTENANCE
3. EASE OF INSTALLATION
4. ATTRACTIVE APPEARANCE

Designed for every traffic condition, economical Union Metal poles are available in pedestal, mast arm and suspension types. For the latest in signal pole information, write to The Union Metal Manufacturing Co., Canton 5, Ohio.

UNION METAL | **traffic signal poles**

Fair Warning is

FAR Warning!

Grotelite reflectorized signs are brighter—seen better—seen farther

The *right* time to warn the driver is when he still has time to do something about it. and signs of *Grotelite* reflex reflective sheeting do just that! They return more light—can be seen from a greater distance. Yes—they're the right *forewarning* because they're *far* warning!

Besides warning you sooner, a *Grotelite* reflectorized sign remains bright, visible and perfectly legible as you approach it—and right on through the complete range of useful visibility.

Grotelite sheeting is easy to handle. Bonds to sign blanks permanently—for many years of service. Its smooth surface is virtually self cleaning.

Let us send you a sample of *Grotelite*. Compare it with anything you are now using. You'll see that *Grotelite* is brighter—has greater target value. It's a quality product—the finest in reflective sheeting. Write today for full details about *Grotelite*.

Grotelite

The GROTE MANUFACTURING CO., INC.
BELLEVUE, KENTUCKY
(Established 1901)

OVER 30 YEARS OF MANUFACTURING EXPERIENCE PRODUCING REFLEX REFLECTORS

MODERN SIGNALS

(Continued from page 245)

in the various positions would call for increasing cycle lengths as he moved toward the "E" end of his course. The net result was that Tommy would choose a cycle length in accordance with the volume of the traffic in the artery. A longer cycle length for heavier traffic or a shorter cycle length for lighter traffic. In the case of no appreciable change Tommy wouldn't jump either forward or backward but would again push the button in the position which he occupied, thus holding the cycle length without change.

The Tillie Time controls at each of the intersections were of the semi-actuated type. Hence the time added to the cycle length as Tommy approached the "E" end of his course would be added to the artery green. The semi-actuated intersectional controls had a measure of independence in that transfer of the green light to the cross street would occur only in the presence of cross street traffic. It would then remain there for a period of time commensurate with the traffic volume thereon, limited to a reasonable maximum. In other words, a semi-actuated control whose cycle length was governed by Tommy Traffic in accordance with the artery traffic volume.

Now Tommy Traffic it seems, had a twin brother whose name was "Timmy Traffic." With an eye to providing employment for his relatives Tommy suggested that the sampling detectors instead of covering the whole road, should be split up into inbound detectors and outbound detectors with Timmy (who could do everything that Tommy did) connected to one set while Tommy was connected to the other. In that way, said Tommy, with Timmy on one course and me on another, running parallel, our respective positions will indicate whether the predominant traffic flow is inbound, outbound, or about evenly balanced. Timmy and I will work as a team, said Tommy. Whichever one of us has heavier traffic positions ahead, will instruct all the Tillie Time controls up and down the highway to set their offsets to facilitate the flow of his traffic. Similarly, if we are less than two positions apart we will instruct the Tillie Times to operate on an average offset, fairly good for both flows, probably not perfect for either. When we are both way down in the "A" position indicating light traffic, we will either tell all the Tillie Time controls to run independently or instruct them to operate on a minimum cycle with average offsets, whichever you prefer.

Systems of this type are in quite widespread use. Tillie, Tommy and Timmy have also been harnessed to systems of synchronous motor intersectional controls. In general in this application, Tommy will measure uptown-downtown traffic while Timmy will measure crosstown traffic. The two corresponding green light periods are then adjusted in accordance with their respective measurements. This type of system has been covered by several articles which you have doubtless read.

When You Change Your Address

. . . please notify us promptly. Your copies of **"Traffic Engineering"** will then reach you without delay and without interruption.—Traffic Engineering Magazine, Strathcona Hall, New Haven 11, Conn.

MIRO-FLEX SIGNS SAVE LIVES

When you are emphasizing safety, your traffic control program calls for Miro-Flex signs. Split second legibility tells both the motorist and the pedestrian what dangers lie ahead. America's most complete sign line includes everything from street name assemblies and parking regulations to standard stop signs and railroad crossing warnings. They are plain embossed or are reflectorized by either glass or plastic buttons or by reflective sheeting or beaded background. All signs are made to meet standards of U. S. Public Roads Administration.

Write for Your Free Copy of the Miro-Flex Catalog, "Signs by Miro-Flex."

THE MIRO-FLEX CO., INC.

1824 EAST SECOND ST. WICHITA, KANSAS

1 pennies

5 nickels

10 dimes

25 *quarters

*Quarters usually reserved for multiple hour parking lot meter.

DUNCAN-AUTOMATON with its new time-saving convertibility adjustment makes changing time limits as easy as it is to loosen a screw and reset to longer or shorter periods of time. Automatically speaking, D-A puts an end forever to old-time pre-winding to make mechanism work automatically, upon insertion of a coin.

DUNCAN-MILLER manual meter digests dimes and quarters* along with nickels, easier than other makes take pennies and nickels . . . for D-M is the original meter made to register dimes in combination with nickels and pennies. For the job of adequately metering curb or parking lot, why don't you write us today for more details on the products of America's largest manufacturer of parking meters.

DUNCAN
PARKING METER CORP.
835 N. WOOD ST. CHICAGO 22, ILL.
Factory at Harrison, Arkansas
Manufacturers of the DUNCAN-AUTOMATON fully automatic and the DUNCAN-MILLER manual parking meters.

. . . and these two meters—the well-known MI-CO Manual, and the original, time-tested MI-CO Twin Automatic—have helped a great many communities unravel tight traffic situations. How? By always delivering unsurpassed performance. Ask any city using them.

MI-COs operate at full productive capacity, with very few interruptions, for ten years and more. They are built to take rough handling, and to withstand the severest weather conditions.

MI-COs are well known for their consistently high earnings and unusually low maintenance over long periods of time. And servicing is comparatively simple. Should a MI-CO need attention, the adjustment is usually made in a few minutes right at the meter location. This advantage keeps nonproductive time at a minimum. You will find that MI-COs earn more because they are seldom out of order.

The purchase of parking meters represents a major investment. That's why it's so essential to check the records carefully before you buy. Insist on complete records . . . performance, earnings, maintenance, life expectancy. And not for a year or two, but over a period of five to ten years and more.

We'll be glad to submit MI-CO records for installations everywhere, and send a list of cities using MI-COs. Write to any of them about their experience with MI-CO Parking Meters.

If you contemplate the purchase of parking meters, whether it be a new installation, adding to your present meters, or replacing obsolete meters, it will pay you to contact MI-CO. They have much to offer for your parking meter dollars.

MI-CO METERS, 241 Court St., Covington, Kentucky
Division of The Michaels Art Bronze Co., Inc.

MICHAELS PRODUCTS:

Store Fronts
Lettering
Check Desks
Lamp Standards
Marquees
Tablets and Signs
Name Plates
Astragals
Railings
Grilles and Wickets
Kick and Push Plates
Push Bars
Thresholds
MI-CO Parking Meters
Museum Trophy Cases
Bronze and Aluminum Doors
Bank Screens and Partitions

TRAFFIC NEWS

Fourth Annual ITE Past Presidents' Award Contest Announcement

The Past President's Award for Merit is presented annually by the Institute of Traffic Engineers to that young man who best shows outstanding accomplishment in the field of original traffic engineering research. The award is intended to encourage the conduct and reporting of independent and original research, and to provide a means for recognizing exceptional contributions to the traffic engineering profession.

The written papers should apply to some phase of traffic engineering research which contributes new and original information or ideas to the profession. The Judges' Committee, who will review the papers, are: Mr. F. B. Crandall, Chairman; Mr. Nathan Cherniack, and Mr. Burton W. Marsh. All three are Past Presidents of the Institute.

The winner of the Award for Merit receives an Award Certificate, which is presented at the Annual Meeting (September 27-30, 1954, Kansas City, Missouri), and is invited to present his winning entry during the technical sessions at the meeting. The winning paper will also be published in the Annual Proceedings.

Rules of Competition:

1. Only Junior and Associate Members under 35 years of age as of the date of closing the competition are eligible to compete.

2. A written report must be submitted. (In triplicate, if possible.) Only one paper should be submitted by each participant.

3. Applicant must furnish evidence that he was responsible for a substantial part of the conception, direction and interpretation of the work reported.

4. If achievement reported has been previously published, it shall have been published within three years of the closing date of competition.

5. The closing date of competition is July 26th, 1954.

For further information contact: Executive Secretary, Institute of Traffic Engineers, Strathcona Hall, New Haven 11, Conn.

58,732 Motorists Checked at Stop Signs

The following report was taken from an article by Leo G. Wilkie (Assoc. Mem., ITE), Traffic Engineer, Cook County Highway Department, Chicago, Illinois. The article appeared in the March 1954 issue, COOK COUNTY HIGHWAYS. Additional analysis is being made on the study.—EDITOR.

Sixty-six stop sign intersections in Cook County outside the city of Chicago were recently studied to determine the extent of obedience by motorists in this area to these important highway signs.

This study was undertaken by the Cook County Traffic Survey and Safety Commission in order to evaluate the relationship of stop sign disobedience to the traffic accidents reported for these intersections.

A preliminary examination of the accident reports of a previous study of some 300 of Cook County's bad accident intersections disclosed that very little, if anything, can be done to improve the physical or engineering elements of some of the intersections. However, a review of the accidents reported for these physically adequate intersections pointed out that many accidents were caused directly by a complete and admitted failure by the motorist to stop for a stop sign.

A preliminary test at three intersections showed that there was general non-conformance to stop signs in this area. However, to eliminate the possibility of a hasty conclusion, it was decided to make an exhaustive study first to determine the degree of non-conformance and then, if possible, to arrive at some specific recommendations to solve this problem.

The investigators tabulated the following information for each intersection:

a. Total traffic entering intersection for duration of test period
b. Voluntary stops
c. Involuntary stops
d. Rolling stops
e. No stops

This information was further classified by type of vehicle, whether truck or passenger car, direction of travel and direction of turning movements. The weather conditions, temperature and other special features of the intersection were also recorded.

Of the 66 intersections included in the report, there were three one-way stop intersections, 42 two-way stops, one three-way stop and 20 four-way stops. The total number of stop signs included was 170. The stop sign intersections were selected, not only because of their accident reputation, but for geographical distribution throughout Cook County.

The results of the study showed a serious percentage of rolling stops and a significant quantity of no stops. According to legal opinion, a "rolling stop" is a distinct violation.

Although the study on stop sign disobedience is not yet completely analyzed, the results already show wholesale disregard for the most important signs of life and death.

Following is a partial tabulation of results already disclosed by the fact finding program.

Of the 58,732 vehicles observed in this study, *12,383 failed to stop;* 11,653 of these went through the intersection on a "rolling stop" basis, while 730 went through at speeds that would be fatal under certain conditions of traffic and apparently without any degree of attention to these signs.

Comparison of obedience for morning and evening peak hours, shows that there are 18 per cent more violations in the morning rush periods, compared to evening rush hours, while a comparison of rush hour to non-rush hour obedience to our stop signs shows that there is little difference.

The afternoon no-peak traffic period is, conformance wise, better by 8 per cent than the morning non-rush hours.

These figures are averages for 66 intersections throughout Cook County outside of Chicago and although these figures show that there is a general disobedience of 20 per cent to stop signs in Cook County, there are many important intersections showing a disobedience as high as 62 per cent.

Urban Land Institute Sponsors Contest

A nationwide competition designed to develop plans for popularizing public transportation as a means of relieving downtown traffic congestion in the nation's cities will be conducted by the Urban Land Institute, of Washington, D. C., an independent research agency in the field of urban planning and development, according to an announcement by John McC. Mowbray, president of ULI.

"The competition will be open to transit systems and their executives and to municipal and county officials, journalists, editorial writers, and others having a direct interest in persuading downtown workers and shoppers to use buses and street cars instead of crowding the streets with private autos," Mr. Mowbray said.

"The entries will be judged by a jury composed of eight well-known business men, transportation specialists, and city planners. The members of the jury are: Harland Bartholomew, city planning consultant, St. Louis, Mo., and chairman of the National Capital Planning Commission, Washington, D. C.; H. L. Bollum, president, Springfield Street Railway Company and past president of the American Transit Association, Springfield, Mass.; Dean E. T. Grether, School of Business Administration, University of California, Berkeley, Cal.; Eugene S. Laughlin, chairman, Connecticut Public Utilities Commission, Hartford, Conn.; Thomas L. Prendergast, vice-president and treasurer, Wanamaker's, Philadelphia, Pa.; Gerald Sivage, Treasurer, Marshall Field & Co., Chicago, Ill.; James B. Webber, Jr., vice-president and general manager, J. L. Hudson Company, Detroit, Mich.; Randall H. Cooper, President, State Street Council, Chicago, Illinois.

"The Urban Land Institute is sponsoring this contest in the belief that it will bring forth workable and successful plans for making public transportation more attractive to the public and for selling the public on the advantages of the improved service.

"The result will be to reduce the amount of downtown traffic and thus make it unnecessary to spend large sums widening streets and constructing new freeways and off-street parking facilities to accommodate the large and increasing number of passenger cars which now present such a grave problem to many of our cities.

"In addition, the public will benefit from lower transportation costs and better service. Downtown merchants will have less cause to worry about loss of business due to traffic congestion.

"The savings realized when the volume of traffic is reduced then can be devoted to the equally serious and all-too-neglected problem of conserving and redeveloping our older downtown areas.

"Separate awards will be made for entries from cities with a population of 500,000 or more and for cities with a population of less than 500,000. In each case, the best entry will receive a Certificate of Exceptional Merit and the five other entries ranked highest by the jury will receive Certificates of Merit.

"The deadline for the receipt of entries is October 1, 1954. Awards will be announced and presented not later than December 1, 1954.

"Entries must be typewritten and may be supported by photographs and other materials which help to explain the ideas set forth."

Details of the competition may be obtained by addressing the Central Business District Council of the Urban Land Institute, 1737 K Street, N. W., Washington 6, D. C.

(More Traffic News on page 263)

Traffic Authorities and City Officials

The **Portable Traffic Signal that meets YOUR Standards**

SPECIFICATIONS

Height—9′ 2″ overall.
Two 8″ wheels with rubber cushion tires.
Completely automatic; also manual control.
Self-contained battery charger, 110-volt.
Heavy-duty 6-volt battery, which will operate signal 18 hours continuously.

Easy on the traffic officer.
Easily handled by one man.
Easily wheeled off the street when not in use.
Easily transported to distant emergency spots by trailer.
Of course it's a portable signal.
In every essential respect it is a regulation-size traffic signal.
"TRAFFIC SENTRY", the portable traffic signal built by Portable Traffic Signals, Inc. was designed, constructed, and is sold to meet the standards set forth in the *Manual on Uniform Traffic Control Devices for Streets and Highways.*

Write for all the facts:

PORTABLE TRAFFIC SIGNALS, INC.
Manufacturers of the "Traffic Sentry"
1620 South Hill Street Los Angeles 15, Calif.

New Appointments . . .

Bunch Goes to Madison

In January 1954 John H. Bunch (Mem., ITE), Traffic Survey Engineer for the Indiana State Highway Department, and former Traffic Engineer for the city of Fort Wayne, took over the job of City Traffic Engineer for the city of Madison, Wisconsin. It is the first time in its history the city has had this specific department.

Bunch's work will include improvements of present traffic operations and planning for major improvements of a long-range nature. Work has already begun on adopting a model traffic ordinance to fit the city's needs, and detailed plans are being worked out with the Police Department on enforcement matters.

Before coming to Wisconsin in 1954, Bunch spent 18 years with the Indiana State Highway Commission, during which time he conducted traffic surveys in all the principal cities of Indiana. These surveys included collecting and analyzing data, specific recommendations for improvements in a complete report, and the preparation of a traffic ordinance. Parking studies were also made in cities of 6,000 to 125,000 population in cooperation with the Bureau of Public Roads.

In 1952 Bunch, at the request of the West German Government, conducted a three-month traffic survey in all of the principal cities of Western Germany. This survey was made as a part of the International Exchange Program for Leaders and Specialists of the U. S. State Department and included over 6,000 miles of travel. One hundred and twenty-five miles of this was on the Autobahn between Western Germany and Berlin in the Russian Zone. Upon his return from Germany he worked for eight months with the city of Fort Wayne as their City Traffic Engineer until July 1953 when he returned to the Indiana State Highway Commission.

John H. Bunch

One of Bunch's most outstanding accomplishments was achieved in 1947 when he succeeded in untangling the traffic snarl at the Indianapolis Speedway. Whereas in previous years persons coming to the Speedway sometimes did not even get in to see the race, in 1947 Bunch devised various methods, including adding 13 entrance gates which opened at 4 a.m. and scheduling express-buses from downtown Indianapolis, which enabled everyone to get into the grounds before the race began.

Bunch is a registered professional engineer, a full member of the Institute of Traffic Engineers and former president of the Indiana Section of that Society.

He is married, has three sons, and spends his spare time fishing and working on home workshop projects.

Gilman Appointed Director

Roger H. Gilman (Assoc. Mem. ITE) on December 31st, 1953, was appointed Director of Port Development of the Port of New York Authority. Mr. Gilman was promoted from the post of Deputy Director of Port Development,

Roger H. Gilman

which position he held since 1945. He joined the Port Authority staff as a statistician in 1937 following his graduation from the Harvard Bureau of Street Traffic Research. He received his degree in engineering science from Harvard University in 1936. He served in the United States Navy from 1942 to 1945 with the rank of Lieutenant.

A member of the American Society of Civil Engineers, he is a member of the Board of Directors of the Metropolitan section of the Society. His home is in Plainfield, New Jersey, and he is a former president of the Plainfield Area Safety Council.

Letters to the Editor

Re: December issue.

Dear Sir:

. . . There is, however, on page 9, a misleading article entitled "Texas' First Tunnel," describing the recently completed Baytown-La Porte Tunnel in the State of Texas. The first tunnel built in Texas was the Washburn Tunnel, opened to traffic in May 1950, which was, incidentally, the second such subaqueous tunnel in the south, and the first one free of toll. For full details of this facility, I refer you to the May 1950 issue of TRAFFIC ENGINEERING. The article entitled "South's First Toll-Free Tunnel," by Wayne F. Palmer, President, Palmer and Baker, Inc., Consulting Engineers, Mobile, Alabama, describes the Washburn Tunnel. Palmer and Baker not only designed this tunnel, but introduced such facilities to the south by engineering the Bankhead Tunnel under the Mobile River in Mobile, Alabama.

I hope that this will set the record straight and credit Texas with two tunnels that it now has.

Sincerely,

DAVID F. DABNEY
(Assoc. Mem., ITE)
Palmer and Baker, Inc.
Mobile, Alabama

Sir:

TRAFFIC ENGINEERING may be the appropriate place for an argument in favor of the collection and utilization of some valuable traffic data which is sometimes thrown away.

Successful use of revenue bond financing for off-street parking is often dependent on reliable estimates of future parking usage. These future conditions can best be anticipated if detailed and reliable data on the past are available, and cities which contemplate future use

(Continued on page 260)

STOP!

READ this index

ACCESSORIES . . . . Page 12
ALIGNMENT SIGNS 10
BARRICADES . . . . . 8 – 9
CIVILIAN DEFENSE EMBLEMS 9
COMMEMORATIVE . . . . . 7 & 13
CUT OUT LETTERS 7
DELINEATORS . . . . . 8 – 9
EMBLEMS . . . . . 8 – 9
EXCLUSION SIGNS 10
FIRE DEPARTMENT EMBLEMS 9
GUIDE SIGNS 13
HIGHWAY PAINT 9
HISTORICAL SIGNS . . . . . 7 & 13
HOUSE NUMBERS 6
LETTERS . . . . . 6 – 7
MOLDED LETTERS 6
NON-REFLECTORIZED SIGNS 10 – 11
PAINT 9
PARKING SIGNS 11
POLICE DEPARTMENT EMBLEMS 9
RAIL MOUNTED LETTERS . . 7
RAILROAD CROSSING SIGNS 4
REFLEXITE, Description of . 3
REGULATORY SIGNS . . 4 – 5 & 11
ROUTE MARKERS 13
SCHOOL SIGNS 10
SIGN ACCESSORIES 12
SPEED REGULATORY SIGNS 8 & 13
SPECIAL SIGNS 13
STOP SIGNS . . . . . 4 & 5
STREET NAME SIGNS . . . . 8 & 9
SYMBOLS . . . . . 4 & 5
TRAFFIC PAINT . . . . . 8 – 9
TURNING REGULATIONS . . 11
WARNING SIGNS . . . . . 4 – 5

SEE what an amazingly comprehensive line of products REFLEXITE offers for Traffic Control—clearly illustrated and described.

SEND FOR REFLEXITE'S *NEW, FREE* CATALOGUE

(Actual sample of REFLEXITE attached)

and—if you don't see the sign you're looking for, REFLEXITE will create it for you—to suit your needs distinctively.

REFLEXITE shines across America—in striking traffic control signs—in highway markers—house numbers—manufacturers' emblems on cars, and many other places. REFLEXITE, a unique injection molded Acrylic Plastic with the lenses actually a part of the surface, has been exposed to every severe weather condition—doesn't deteriorate or fade—resists fungus—is self-cleaned with rain. Thus thoroughly tested and proven, REFLEXITE signs are now available for the use of municipalities, counties and states. All standard signs are immediately available from stock. Write for your free catalogue. See how REFLEXITE will work brilliantly for YOU!

MAIL THIS COUPON TODAY

The Light That Never Burns Out

REFLEXITE

CORPORATION

Dept. TE, Stamford, Connecticut

Please send me free of charge Reflexite's new, 1954 catalogue.

Name _____

Organization _____

Address _____

_____

City _____ *State* _____

Millions of Plexiglas Lenses Make Super Highways Safer

Weather-Resistant Reflecting Signs Give High Visibility to Match Higher Speeds

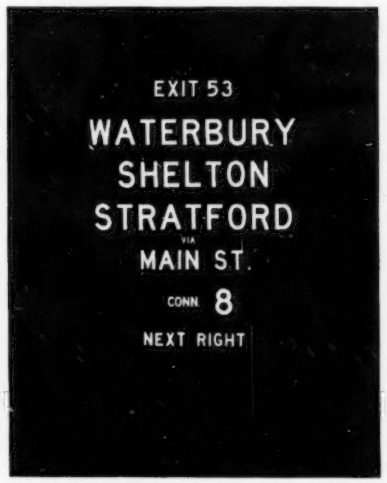
Motorists enjoying high-speed travel on such modern super highways as the 118-mile New Jersey Turnpike, the Merritt and Wilbur Cross Parkways in Connecticut, the New Hampshire Turnpike, the Taconic Parkway in New York, and the new Route 128 which bypasses Boston are being protected by signs as distinct by night as they are by day. An important reason for their widespread adoption by highway and safety engineers is the permanence of their reflective feature, so valuable at night.

By day, the entire Merritt Parkway Sign, except for the legend, is a soft green in tone.

These new signs depend for their efficiency and durability on the optical clarity and weather resistance of Plexiglas acrylic plastic. Such signs must withstand all that direct sunlight and the extremes of bad weather can heap upon them. Optical clarity is vital because the surfaces of these signs are actually an unbroken succession of miniature but optically accurate lenses —2900 of them to the square inch.

These lenses, usually of .070-in. focal length, gather the light from approaching headlights, focusing it to pinpoints of light on the flat back surface which is the focal plane of the lenses on the front surface. This light is bounced off aluminum which, evaporated on the back of the plastic provides a reflecting surface. The lenses focus the reflected light into a long, relatively narrow beam and direct it back toward the approaching car. Thus oncoming motorists face signs which appear to be interior-lighted, are visible and legible at maximum distances, yet produce no glare.

The sign material itself begins as granules of heat-resistant Plexiglas V-100 molding powder, transparent and colorless. The powder is injection-molded into the thin lensic-surface sheets for the Reflexite Corporation of Stamford, Conn., which manufactures the signs and developed the method of molding the accurate lens pattern. The sign material is generally produced in individual 8" x 9" sections which are used in multiples for a single large sign.



On Connecticut's Merritt Parkway, headlights produce this result.

Letters and numbers are available in any size, style or color.

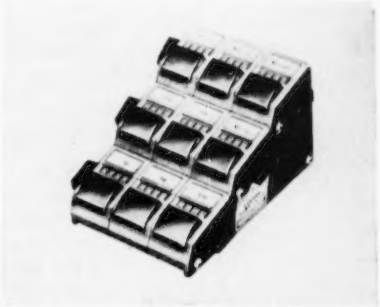
Weather resistance of the plastic material has been proved in thousands of interior-lighted commercial Plexiglas signs, some of them exposed to humid coastal atmospheres for more than a decade. Reflexite route markers have been in service in New Jersey for more than seven years without loss of reflecting intensity and one Reflexite sign, installed in a test location on Connecticut's Merritt Parkway, is beginning its fifth year of service. Twice hit by cars, the framework was damaged but the shatter-resistant Plexiglas remained intact.

To the budget-conscious highway engineer, however, the permanency of the reflective power is of utmost importance. Photometric measurements of reflectance values, made on the roof of the Electrical Testing Laboratory in New York, show no detectable loss in three full year's exposure.

Reflexite Municipal Signs, a complete line of which is available, are priced competitively with those utilizing much less permanent reflective sheetings.

"Vary-Tally" New Veeder Root Counter

Since its introduction a short time ago, the Veeder-Root Vary-Tally Counter has been used for quality control, inventory control, traffic control, sales analysis, laboratory analysis, payroll preparation and many other uses in a wide variety of industries, businesses and institutions, according to the manufacturer, Veeder-Root, Incorporated, Hartford, Conn.



The equipment is available in any of 66 combinations, up to 6 banks high and 12 units wide, with a minimum of 2 units wide, arranged compactly on stands in tiers. Fingertip pressure on the front lever of a unit registers each count from one to 9999. A reset knob returns all counters in any tier to zero instantly with one complete turn of the reset shaft. The name, color, denomination, quality or size, etc., of the item to be counted is inserted in a panel over the reading line on each Vary-Tally.

Features include no-glare, easy readability—even from an angle, portability, no obscuring of the figures by the operator's fingers and rugged construction. For complete details and literature write to Veeder-Root, Incorporated, Hartford 2, Connecticut.

— POSITIONS AVAILABLE —

TRAFFIC ENGINEER
FOR AUTOMOBILE CLUB

GRADUATE ENGINEER
with minimum two years experience in traffic engineering required. Salary commensurate with experience.
Apply: Charles J. Murphy
Director, Traffic Engineering Department,
Automobile Club of New York, Madison Avenue at 78th Street
New York, New York

—o—

TRAFFIC ENGINEERS
VENEZUELA

To assist the Venezuelan Government in solving the serious traffic problem existing within the city and environments of Caracas.
Competent and experienced traffic engineers necessary.
One or two year contract.
Salary commensurate with experience.
Inquire: Box 300, Institute of Traffic Engineers
Strathcona Hall, New Haven 11, Conn.

—o—

TRAFFIC ENGINEER

CITY OF EAST ORANGE, NEW JERSEY
Approximate Population of 80,000
Four Square Mile Area
Salary Commensurate with Experience.
For further details, inquire:
Mr. Arthur T. Brokaw, City Engineer
East Orange, New Jersey

STRICTLY BUSINESS

"If they won't cut their prices, raise the devil, if they do, don't buy anything from them."

Courtesy, Harrison 20-20

Parkit-Lockit Company Proposes "nickel-feeder" Cure

If the parking meter is to survive it must be able to eliminate the fast growing number of "nickel-feeders." These parking hogs are directly responsible for the increased average parking time at curb meters. It should be emphasized that sixteen average parkers could be accommodated in the same space occupied by just one all-day parking hog. To combat this menace many large cities throughout the country have reverted at least partially to the old tire-marking system. The result in every case has been a substantial increase in car-space turnover. Let's face the facts —a parking meter does not limit parking. It is only a means of collecting a fee.

The real reason for the limited use of the tire-marking system is the higher cost of policing the car added to an already high cost of maintaining and policing the meter. If the car is to be policed, there is no need for a clock in a meter because the patrolling officer actually times his own beat. Let's face the facts again — a clock in a meter merely shows how much "paid-for" time remains and cannot possibly show how long a car has been parked. It therefore stands to reason a simple coin collector without a clock to get out of order will prove a more efficient fee collector.

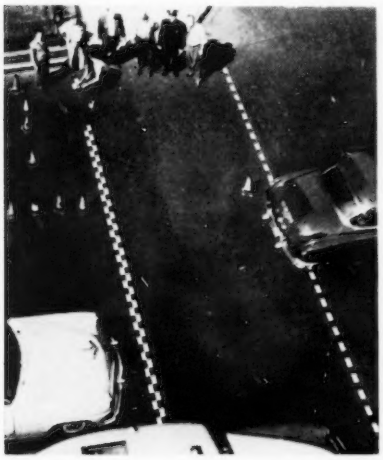
The Parkit-Lockit Company has developed an inexpensive "coin collector" type parking meter. It is clockless, has no moving parts to get out of order and does not show unused free-time left on the meter. The cost of tire-marking and meter inspection of clockless meters is no greater than the combined cost of maintaining and policing clock-type meters exclusive of tire-marking. This modern method of patrolling the car and the meter will increase parking turnover substantially. The elimination of free-time on meters will increase revenue up to 60% and at the same time stop cruising, a definite traffic hazard. The Parkit-Lockit Company, confident of these results, will 90% of the time replace clock-type meters with their own and rely solely on the excess revenue produced to pay for them.

The above described method of policing both the car and the meter will force the nickel-feeders into parking lots. There is however another method of accomplishing the same purpose. The nickel-feeder can be attracted outside the business area instead of forced out. To do this surround the 1-hour metered area with Fringe meters permitting up to all-day parking at reduced rates. These meters force the all-day free parker one block further away and attract the willing-to-pay nickel-feeder from the 1-hour area. The effectiveness of this method is in direct proportion to the nearness of Fringe meters to the center of the business district. For this reason their use should be confined to communities of less than 100,000 population or to suburban areas of larger cities.

The Parkit-Lockit Company (Newtown, Ohio) also manufactures a complete line of Parking Lot meters. These meters have the unique distinction of producing substantially more revenue than the maximum the rates would indicate. This hidden-coin feature eliminates unused free-time from the meter.

National Road Markers Installed at 75 Per Man Per Hour

Picture below shows a recent installation of National GEON Road Markers at Park Avenue and 56th Street, New York City. Excellent performance from these markers has also been received in Atlanta, Georgia; Washington, D. C.; and Chicago, Illinois. These GEON permanent plastic Highway Markers are manufactured by National Road Marker Company, 166 W. Jackson Boulevard, Chicago 4, Illinois.



New Automatic Parking System Introduced

As a solution to the problem of public parking for municipalities as well as private parking for industrial plants and institutions, the Parking Corporation of America, Chicago, has just introduced a new car parking system to operate parking lots automatically, without attendants.

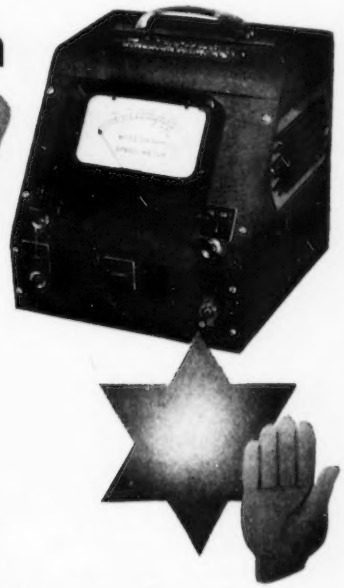
According to the announcement, this new Parcoa system is a development by Johnson Fare Box Company, parent company, revenue-collection specialists since 1909. The system is electrically operated. A coded card-key actuates the control mechanism which operates the entrance and exit gates automatically. Only authorized card-key holders can park, and the code of the card-key can be altered as required in revenue-producing parking areas where there is a monthly fee, it is stated.

Advantages claimed for this system include low first cost; negligible maintenance; savings in labor because no attendants are required; complete safety; 100% collections where revenue is involved; complete control of privacy for parking in hospitals, industrial plants, clubs, schools, and other institutions.

For municipalities with public parking requirements, the system offers the additional feature of operation with coins, tokens or card-keys, or any combination of these.

Full details can be obtained direct from Parking Corporation of America, 33 North La Salle Street, Chicago 2, Illinois.

THE Ametron SPEED METER



takes the guessing out of catching the speeder on the highway. It tells at once the exact rate at which the driver is traveling. Takes only a few minutes to set up. Indicates the speed of vehicles directly on the meter face. Measures the time it takes a vehicle to pass between two road tubes spaced 11 feet apart. Front wheels of vehicle actuate a trigger circuit as they cross the first tube. When front wheels hit second tube timer stops and speed is read on instrument. Directional control allows measuring of speed in either direction.

So simple its maintenance cost is very low. So compact it is easily portable. Best of all—its low cost will surprise you.

Police officials who have tried it out are enthusiastic over its effectiveness.

Write for illustrated brochure

STANDARD OF ACCURACY SINCE 1888

STREETER-AMET COMPANY

4101 RAVENSWOOD AVENUE • CHICAGO 13, ILLINOIS

Branches in Pittsburgh, Pa., Allentown, Pa. and Birmingham, Ala.

Shopping Center

For detailed information and prices at no obligation to you, write directly to the manufacturers or check the desired numbers and mail to: Shopping Center, 8TRAFFIC ENGINEERING, Strathcona Hall, New Haven 11, Conn.

Rip — Snip — Clip — Rip — Snip — Clip — Rip — Snip — Clip — Rip — Snip — Clip — Rip — Snip — Clip — Rip — Snip —

48 49 50 51 52 53 54 55 56

Name ..... Title .....

Address .....

Snip — Clip — Rip — Snip — Clip — Rip — Snip — Clip — Rip — Snip — Clip — Rip — Snip — Clip — Rip — Snip — Clip — Rip

48. U. S. Rubber Co. Gives Outstanding Cable Performance

U. S. Rubber Company's cable construction has an important common feature: the individual conductors are all insulated with United States Rubber Company *Laytex* insulation. The development of this unique type of wire insulation finds perfect application in cables for traffic control and other systems. The important characteristics of *Laytex* insulated cables and their small diameters and low weights make them the obvious choice for this type of service. Let U. S. Rubber help you with your signal control needs.

UNITED STATES RUBBER CO.
1230 AVENUE OF THE AMERICAS
NEW YORK 20, NEW YORK

49. A Message for Those in Charge of Pavement Marking

Armor Flex Traffic Markers might be the answer to your needs. Installed easily and quickly with a special hot mastic, Armor Flex Asphalt Cement. Traffic goes over them immediately after installation. They give extremely effective marking due to their clear, sharp lines. Amor Flex markers have been performing their job for well over fifteen years. They are thoroughly tried, tested and proven. Armor Flex suggests you put in a few test installations. Judge them for the next few months in your own city, under your own conditions at some of your trouble spots. Write for complete details.

ARMOR FLEX TRAFFIC PRODUCTS
6069 AMHERST AVE.
ST. LOUIS 5, MISSOURI

50. Save Time and Money with Calculagraph

Your parking facilities can speed service and increase profits. The Calculagraph records in and out time! Figures amount due automatically! Speeds car parking and check-out! Quick, accurate, automatic, calculagraph features silent, smooth action. Any number of car tickets can be accurately handled in any order by one Calculagraph. There is no chance for error in either recording or figuring amount due. Write for additional data:

CALCULAGRAPH COMPANY, INC.
306 SUSSEX ST.
HARRISON, NEW JERSEY

51. Straitray May Be The Answer to Your Traffic Problems

"Straitray" is the trade name for a corrugated louver type of traffic signal light masking device which will make your signal system more effective. The fins afford just enough contrast against the background of a red signal so that the vehicle operator can readily determine whether this light is on, even though the sun's rays may be directly behind the signal head. The "Straitray" traffic signal ray directors have many other important features that may be the key to keeping your motorists on the beam. Write for further explanation and information to:

ELWOOD WILES COMPANY
012 S. W. MONTGOMERY ST.
PORTLAND 1, OREGON

52. A New and Sturdy Parking Meter

Martin Red Ball Parking Meters have the outstanding violation signal that can be seen from all directions. These meters were subjected to rigorous trial tests over a three-year period in various towns and cities throughout the country, proving their worth in all types of climatic conditions. The accent on this meter has been placed on the simplicity of operation at all times. As a result there is an economy of service, an economy of cost, and police regulation. These factors all reflect in the municipal treasury. Write for further information about the new Martin Red Ball Parking Meters.

MARTIN RED BALL PARKING METERS
500 FIFTH AVE.
NEW YORK 18, NEW YORK

53. Fletcher Standardized Granite Curbs Mean Highway Safety, Traffic Control

The ready acceptance of granite for highway purposes and the gratifying record it has established emphasize its superiority through many advantages: Granite products do not readily wear out; their life and beauty may be additionally prolonged through re-use. Granite curb contributes to highway safety by reflecting light and defining highway boundaries. Write for the new Fletcher booklet which gives you up-to-date information on Fletcher granite highway products:

H. E. FLETCHER COMPANY
WEST CHELMSFORD, MASS.

54. New Plastic Traffic Signs Available

Sy-loy is the trade-name which the General Tire and Rubber Company has given to its improved polyester. This new development has made possible the plastic signs that reflect their warning and danger messages to the driver. Made of glass reinforced Sy-loy, the new sign was designed for maximum reflectability to carry the warnings directly to the driver via the headlight beams. These signs are being produced in 17 different sizes and shapes. By use of varying lengths, the 17 basic signs can be expanded to nearly 80 types of highway markers. For sharp visibility, no matter what the weather conditions are, write for details to:

MUNICIPAL STREET SIGN CO.
BROOKLYN 22, N. Y.

55. Do You Want Increased Parking Meter Revenues?

Surveys show that over 50% of motorists do not pay for parking due to the fact that parking meters are not constructed to turn to violation as each vehicle leaves. The LOVAAS Parking Meter Time Eraser has solved the dual problem of loss of revenue and traffic congestion caused by cruising and double parking while searching for free time. The Time Eraser is an addition to your parking meter. It is not necessary to change meters. It is easily installed and does not interfere with your meter operation or servicing. It is attachable to your present parking meter. So don't give away your parking time. Write for the amazing story of how to increase your meter revenues 2 to 4 times:

PARKING METER APPLIANCES INC.
LANDRETH BUILDING
4th and LOCUST
ST. LOUIS, MISSOURI

56. Perm-a-Lite is the Newest Development in Traffic Signs

Although the newest illuminated traffic sign in the traffic field today . . . Perm-A-Lite has proved its superiority in rigid on-the-job tests. Their clear visibility is achieved by behind-the-message illumination. Extra long-life cold cathode lamps give non-glare illumination through Plexiglas sign panel. High diffusion quality of translucent Plexiglas produces shadowless, even light behind the message. Write for details, prices or estimates on any type of illuminated traffic sign custom built to your own specifications:

ELWOOD WILES COMPANY
PORTLAND 1, OREGON

SECTION NEWS

Southern Section

Forty of 81 eligible members have joined the Southern Section of ITE.

Please encourage all your eligible friends and colleagues to join. We want 100% participation.

The first business session of this section was held at 3:30 P.M., Monday, March 8, 1954, at the Seelback Hotel, in Louisville, Kentucky in conjunction with the 15th Meeting Southern Safety Conference. The following important items of business were transacted:

1. Amendment to Southern Section by-laws to increase the Nominating Committee from three (3) to five (5) members was adopted.
2. Karl Bevins was unanimously endorsed for nomination as District 5 Director on the Board of Direction, Institute of Traffic Engineers.
3. Set 1954-55 dues at $1.00 and set section year to coincide with meetings of the Southern Safety Conference each March.
4. Elected Paul L. Ristroph, President; Karl A. Bevins, Vice-President and John T. Hanna, Secretary-Treasurer, to serve until March 1955.

Some late items of news are submitted herewith:

J. Duval Lee (Jr.—ITE) Traffic Engineer, Lynchburg, Virginia reports:

"The idea of one-way streets on our two primary downtown arteries has been batted around for the last eighteen months. We have reports compiled by the State Highway Department, Mr. George Barton, who was retained by a group of downtown merchants and citizens, and a pulling-together of these reports by me. The Retail Merchants Association and other downtown businessmen have expressed opposition to any changes in curb parking regulations and strongly endorse one-way streets for seven blocks along our two main business streets.

"The idea of a traffic ballot originated with the Retail Merchants Association. This Association mailed out 480 ballots to downtown business and professional men. The newspaper picked it up and for two weeks, beginning January 30, published the ballot in both the morning and afternoon papers, with 651 ballots returned. The table is a tabulation of the results of both the Retail Merchants Association ballot and the newspaper ballot.

GUARDING THE NATION'S HIGHWAYS

TUTHILL "HYWAY" GUARD RAIL

SHOWN WITH No. 4 BRACKET

STATE OF ILLINOIS—CALUMET EXPRESSWAY

More and more traffic engineers are specifying TUTHILL "HYWAY" Guard because of its superior strength, safe shock-absorbent deflection, and simple installation. The improved No. 4 Bracket cushions shock to vehicle and occupants. Attached by single bolt through post—little or no maintenance required. Meets Public Road Administration specifications for spring-mounted Beam-Type guard rail.

WRITE TODAY for complete Technical Brochure

TUTHILL SPRING CO.

760 WEST POLK STREET • CHICAGO 7, ILLINOIS

"The Council at its meeting February 9, by a four to three vote, decided to install one-way streets on a ninety-day trial basis. Action on parking limitations has been deferred until after the results of the one-way streets can be seen."

FINAL BALLOT ON TRAFFIC QUESTIONS

	R.M.A. Ballot	News	Total
IN FAVOR OF ONE-WAY STREETS	219	302	521
NOT IN FAVOR	70	327	397
IN FAVOR OF THIRTY MINUTE PARKING	33	68	101
NOT IN FAVOR	242	531	773
IN FAVOR NO PARKING MAIN ST. 4-6 P.M.	65	316	381
NOT IN FAVOR	230	301	531

480 BALLOTS MAILED OUT BY R.M.A.
306 BALLOTS RETURNED TO R.M.A.
651 BALLOTS MAILED TO NEWSPAPERS

W. F. Watkins, (Mem.—ITE) Traffic Engineer, of Louisville, Kentucky, extended a warm welcome to every member attending the Southern Section Meeting.

Reported by
JOHN T. HANNA
Secretary-Treasurer

New York Metropolitan Section

Our sixth meeting of the 1953-54 fiscal year was held at the Masonic Club, 23rd Street at Sixth Avenue, at 12:00 Noon on February 17, with twenty members and guests present.

Henry Fagan, Planning Director of the Regional Planning Association, Inc. presented a very interesting series of charts and maps showing various areas, directions, rates and values of growth in employment, homes constructed, industry, land development, manufacturing, population, etc. for the Metropolitan New York area.

As an example, he showed how the construction of the George Washington Bridge and the Lincoln Tunnel with their connecting highways had materially hastened a shift in transportation usage by commuters from rail to the automobile and bus in northern New Jersey, while on Long Island both types of transportation had increased more evenly, and in lower Connecticut and Westchester there has been little change in the past twenty years.

The talk and discussion period following were thoroughly enjoyed by all present.

Reported by HERBERT J. KLAR
Secretary-Treasurer

Western Section

The program for the Annual Meeting of the Western Section is rapidly taking final shape under the guidance of Larry Thompson, Bud George, Profs. Glen Holcomb and Martin Coopey of Oregon State College. The meeting will be held in conjunction with the North-West Traffic Engineering Conference on the Corvallis Campus on May 12, 13, and 14, 1954.

The business meeting will take place Wednesday, May 12th, from 2 p.m. to 5 p.m. to be followed by a dinner at the H-Bar-H (Corvallis' equivalent of a night club).

First on the agenda will be the election of officers for the coming year. The nominating committee headed by Jim Reading of San Diego has presented the following nominations:

President—J. Al Head

Vice-President—Alexander L. Hutchison, Allen R. Pepper

Secretary-Treasurer—Carlton C. Robinson

A proposed amendment to the Western Section Constitution has been submitted by members Berry, Crandall, Fowler, Head and Weller. This proposal would amend section two, article three, to allow junior members to vote and hold the Secretary-Treasurer position. Since 42 of the 140 members of Western Section are juniors, this amendment would materially increase the active participation in section business. There are at present 42 juniors, 59 associates and 39 members in Western Section.

Three amendments to the By-Laws have been initiated by the officers. These are "machinery" changes. The first would change the wording of the section on dues to conform with the proposed constitutional change and keep the dues schedule at its present level.

The other changes further amend the By-Laws to bring the dates for various notices, etc., in line with the present meeting date in spring. As many recall, at the time the Constitution was written, annual meetings were scheduled in the fall.

These amendments and any others submitted by petition of five voting members will be discussed and, if approved, will be submitted to the membership by mail following the Annual Meeting.

Also to be discussed will be a possible bid for the 1956 Annual ITE Meeting for a Western Section City.

President Berry has appointed a committee headed by Joe Havenner to report on possible uses of the surplus in the Western Section treasury and this group will report at the meeting.

The technical program in conjunction with the Northwest Conference tentatively lines up as follows:

Thursday a.m.—Registration.

Welcoming Address.

"The Traffic Engineer's Responsibility," a discussion by representatives of allied groups of the fields in which traffic engineering affects them and the traffic engineer's duty to them.

Thursday p.m.—"Intersection Lighting"—A panel discussion on practices and recommended warrants and standards for intersection lighting. Panel members will be drawn from the Western States Highway Departments.

Thursday Night — Banquet. The speaker of the evening will be Joe Mattson, President of A.S.F.

Friday a.m.—"Effective Use of Traffic Signs." Included will be a discussion of new research results as well as existing and proposed standards for sign design and use.

Friday p.m.—"What's New in the West." An open discussion to bring out innovations in traffic control in the various areas of the section.

This program has something of interest to every member of the section so plan now to attend. There will be a full program for the ladies and nursery facilities, baby sitters and play schools for the kids are available. Spring is a wonderful time for a vacation in the Northwest so plan to attend with the whole family. Advance registrations are being handled by Prof. Martin Coopey, 207 Apperson Hall, Corvallis, Oregon.

* * *

Skinny Deyoung is up and about after another feud with the doctors about the DeYoung proboscus. At last report he and Johnnie Barker were heading south of the border, down Mexico way, interpreter and all. The purported purpose of the trip is to sell traffic signals.

Reported by C. C. Robinson
Acting Secretary-Treasurer

LETTERS

(Continued from page 253)

of revenue bond financing should now be compiling records of present parking usage.

One very fine source of data is available but not always used to the best possible advantage: income from existing parking meters. Counting and recording meter receipts by individual meter or at least by block face enables a city to compile a detailed long-term record of the revenue-producing ability of parking spaces in different parts of the community.

The ability to present more and better evidence in support of estimates of future revenues make it easier to prepare a sound revenue bond financing plan. It may also make the bonds more attractive to buyers when issued. Even if no such financing is contemplated, however, collection of data on individual parking meter income over a long period appears to be of great potential value in identifying and evaluating trends in parking patterns and in planning for future needs.

Parking meters will provide many data quite easily recorded for future usefulness, since their receipts must be counted on a periodic schedule anyway. City traffic engineers should avoid discarding this potentially valuable information.

RICHARD M. BARTLE
(Jun. Mem., ITE)
Municipal Financing Consultant
Stone & Youngberg
Investment Securities
San Francisco, Cal.

Thank you for a provocative letter. We are sure that some Traffic Engineers have long followed this system and undoubtedly have utilized the data for other purposes. We hope this letter will elicit comment for future issues of this magazine.—EDITOR.

LOOKING AHEAD

APRIL 19-22, 1954 — LAFAYETTE, INDIANA
Purdue Road School, Purdue University.

MAY 4-6, 1954 — WASHINGTON, D. C.
Fifth Highway Transportation Congress, Mayflower Hotel.

MAY 12-14 — CORVALLIS, OREGON
Combined meetings of the Western Section, ITE-Northwest Traffic Engineering Conference (both 7th Annual). Oregon State College.

SEPTEMBER 27-30, 1954 — KANSAS CITY, MO.
25th Annual Meeting, Institute of Traffic Engineers, Muehlbach Hotel.

WANTED

TRAFFIC ENGINEER

CONSULTING FIRM

LOCATION, SOUTH

B.S. Degree in Civil Engineering

Education in Traffic Engineering

or

A B.S. degree in Civil Engineering

Minimum 3 years experience on

Traffic Surveys and Planning.

DUTIES:

Assistant Traffic Engineer to jointly plan and execute all phases of surveys; the compilation of data and interpretation of results.

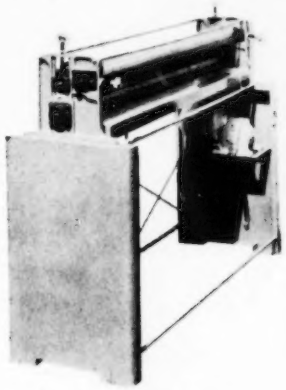
REPLY:

Box 200
Institute of Traffic Engineers
Strathcona Hall
New Haven 11, Conn.

MEMBERSHIP INFORMATION

may be obtained by writing to:

Executive Secretary
Institute of Traffic Engineers
Strathcona Hall
New Haven 11, Connecticut



Model 51-C-1 Single Coater
Moderately Priced

NOW

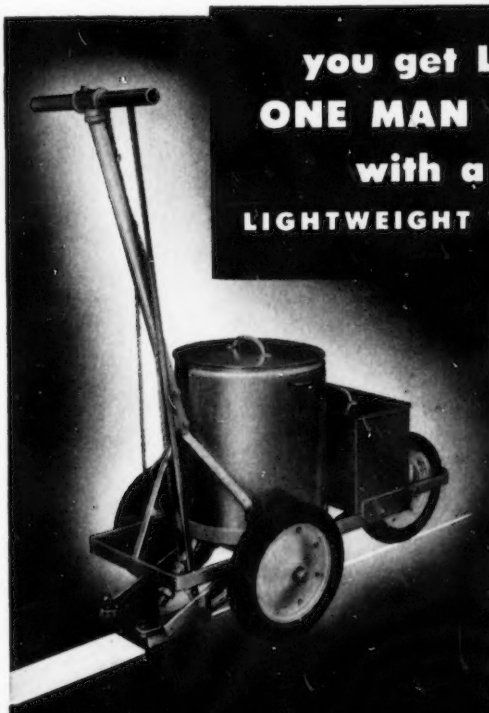
YOU CAN COAT TRAFFIC AND STREET SIGNS FASTER AND SAVE UP TO 50% ON LABOR AND MATERIAL

New Heavy Duty
WALCO COATER

AVAILABLE IN SINGLE and DOUBLE COATERS
Will Coat up to 50" wide — 1½" in Thickness Coats up to 3800 linear feet per hour. Covers up to 850 square feet per gallon of material. In many instances savings have been shown up to 50% as compared with spraying. Machine is designed for simple, easy operation. Now in use by City of Dallas, Houston, Akron, State of Massachusetts, Michigan, and many others. Write for literature. Double Coater Model 51-D-2

Dealer Inquiries Invited

L. R. WALLACE & COMPANY
191 N. Pasadena Avenue Pasadena, Cal.



you get LOW-COST, ONE MAN OPERATION with a JAWCO LIGHTWEIGHT TRAFFIC LINER!

The JAWCO Lightweight Traffic Liner, with 5 gallon capacity, combines ease of operation with low initial, maintenance and upkeep costs.

One inexperienced man can easily give you smooth, even, straight traffic and zoning lines with a JAWCO Lightweight Traffic Liner.

Inquire today! For further information, delivery date and price, write —

WEAVER MACHINE COMPANY
P. O. BOX 1224 · PLANT OFFICE: 209-215 BUTLER ST. · YORK 1, PA.

Save money on the signs that last a lifetime!

Break-Proof SY-LOY Plastic Traffic Signs!

The General Tire and Rubber Co. and Municipal Street Sign Co., introduce SY-LOY, the miracle plastic. The SY-LOY used in our traffic signs is the same used for the bodies of some of America's leading autos. SY-LOY signs are rustproof, have built-in color and need no maintenance... truly signs that last a lifetime!

FREE TRIAL! We pay the freight on your first order, we're so sure "MUNICIPAL" SY-LOY SIGNS can solve your traffic sign headache. If you don't agree after seeing, testing and using, return them at our expense. We know though that you'll use and specify SY-LOY, the sign of tomorrow.

The new white on red 24" x 24" Stop Sign fully reflectorized . . $5.85 each (26 or more).

Available (plain or reflect.) in all standard sizes and legends.

REQUEST DETAILED TECHNICAL SPECIFICATIONS

MUNICIPAL STREET SIGN CO., Inc.
773-7 Meeker Ave., B'klyn, N. Y.

MUNICIPAL SALES REPRESENTATIVE WANTED

TRAFFIC SIGNAL EQUIPMENT

LARGE ESTABLISHED COMPANY

FOR EASTERN TERRITORY

— QUALIFICATIONS —
SOME TRAFFIC ENGINEERING EXPERIENCE
ELECTRICAL ENGINEERING
BACKGROUND HELPFUL

— WONDERFUL EARNING POTENTIAL —

Write Summary of Experience and Training to:

BOX 100, INSTITUTE TRAFFIC ENGINEERS
STRATHCONA HALL
NEW HAVEN 11, CONN.

Sustaining Organizations

In accordance with Art. XI of the By-Laws of the ITE, the following is the Sustaining Organization Roster for the year 1954.

A'G'A Division of Elastic Stop Nut Corporation of America
1027 Newark Avenue
Elizabeth 3, New Jersey
Attn: Mr. Irving J. Mack
Sustaining Organization Representative

American Transit Association
292 Madison Avenue
New York 17, New York
Attn: Mr. George W. Anderson
Sustaining Organization Representative

California Metal Enameling Company
6904 East Slauson Avenue
Los Angeles 22, California
Attn: Mr. J. T. Penton
Sustaining Organization Representative

The Grote Manufacturing Company, Inc.
Bellevue
Kentucky
Attn: Mr. W. E. Miles
Sustaining Organization Representative

The Marbelite Company, Inc.
27 Warren Street
New York 7, New York
Attn: Mr. William E. Lenz
Sustaining Organization Representative

Minnesota Mining & Manufacturing Company
900 Fauquier Avenue
St. Paul 6, Minnesota
Attn: Mr. Donald O. Opstad
Sustaining Organization Representative

Miro-Flex Company, Inc.
1824 East Second Street
Wichita, Kansas
Attn: Mr. H. H. Carver
Sustaining Organization Representative

Prismo Safety Corporation
Huntingdon
Pennsylvania
Attn: Mr. John C. Horn
Sustaining Organization Representative

Reflexite Corporation
114 Manhattan Street
Stamford, Connecticut
Attn: Mr. W. Burke Smith
Sustaining Organization Representative

Traffic & Street Sign Company
84 Foundry Street
Newark 5, New Jersey
Attn: Mr. William H. Spurgeon
Sustaining Organization Representative

(Continued from page 252)

Traffic Sign Tests Find New Answers

A highway test in Minnesota, dealing with the problem of dirt accumulation on reflectorized traffic signs, has resulted in a remedy which can increase sign effectiveness yet decrease maintenance cost.

The answer: move the signs two feet up and two feet over from the position now widely used. This would result in a position six feet above the crown of the road and ten feet from the pavement edge.

Years ago, this solution would have been impossible for it would have removed the sign from the "hot spot" of the approaching vehicle's headlights; but with modern reflective sheeting materials this obstacle has been overcome.

The study was made during a 19-month period in weather involving snow, sleet, slush, sludge, muddy water and heavy rains, and in temperatures ranging from 25 degrees below zero to 100 degrees above.

Two test panels, each composed of seven metal posts, were installed along a highway. One panel was placed in a "splash" area where water accumulates in puddles and is splashed in large quantities by passing vehicles. The second panel was placed in a "spray" area where water drains away and traffic signs are subjected to a fine spray of muddy water.

The stakes in each panel were placed at various distances from the edge of the pavement. Surfaces of the posts were covered with "Scotchlite" brand reflective sheeting. Glass reflector buttons and plastic unit type reflectors were also placed on the posts. Daytime and nighttime brightness was measured immediately after installation and at intervals during the 19-month period.

Four specific findings were reported: 1) for maximum efficiency and performance traffic signs should be installed six feet above the pavement crown and ten feet from the pavement edge; 2) use of smooth surface reflective sheeting helps reduce maintenance requirements; 3) signs with reflective sheeting are brighter and remain more effective under all conditions than signs with other type reflective units; 4) any cost of repositioning the sign would be more than offset by the decrease in maintenance cost and the increase in sign efficiency.

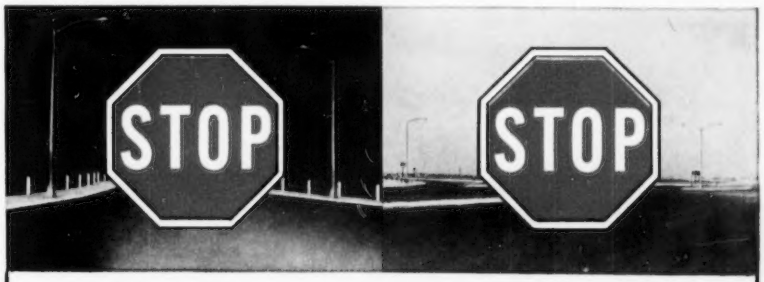
Maintenance costs are greatly reduced for two reasons: placement of the signs up and away from the greater splash and spray areas, and the use of the reflective sheeting which requires less maintenance than other reflective signs to retain original daytime and nighttime brightness. During periods of rain the reflective sheeting partially cleans itself, restoring much of its reflective quality without maintenance.

Other advantages of moving the signs two feet farther from the pavement edge include more room for the blading, mowing, scraping and plowing operations, and reduction in sign mutilation and post damage. The cleaner shoulders also allow safer parking.

Placing the signs two feet higher helps reduce vandalism and makes the signs more visible from the inside lane of multi-lane highways.

Details of the traffic sign study and its results are presented in a report printed by Minnesota Mining and Manufacturing Company, St. Paul, Minn., and are obtainable upon request.

The June, 1952 issue, TRAFFIC ENGINEERING, carried an article, Tests to Determine a Splash Pattern for Signs in Missouri by Mr. George C. Lichty (Assoc. Mem. ITE), Assistant Traffic Engineer, Missouri State Highway Commission, Jefferson City, Missouri. This report closely parallels the results stated in Mr. Lichty's article.—EDITOR.



RED MEANS STOP

APPROVED BY THE PUBLIC ROADS ADMINISTRATION

The new Tassco look in stop signs is destined to save many lives and avert accidents on America's streets and highways!

Many states have passed legislation approving this stop sign, and more have amendments pending.

Here is the stop sign that can *only* be interpreted as "Danger! STOP!" Its red color cannot be missed or confused with other signs. Most important, Tassco Red Stop Signs are reflectorized in both colors . . . drivers see the same sign, same shape, same colors both day and night!

If red stop signs are approved in your state, Tassco signs offer you a new, efficient tool to help better traffic control and safety. As all Tassco signs, the red stop sign is specially made and treated to resist weather and damage from other causes.

WRITE FOR FULL INFORMATION ABOUT TASSCO RED STOP SIGNS . . . and for the Tassco Catalog of Traffic and Street Signs in every category.

The Sign of TASSCO Traffic Safety

TRAFFIC and STREET SIGN COMPANY

84 FOUNDRY STREET • NEWARK 5, N. J.

Fellowships Available

Yale University offers a one-year course of graduate study in traffic engineering. The course is open to men who have received a degree in engineering from an accredited college. In accepting students for enrollment consideration is given to the character of work done in the undergraduate course, to the evidence of aptitude and interest of the student for highway traffic work, and to other relevant factors. Classes begin September 20, 1954.

Fellowships

There are available an increased number of fellowships in Traffic Engineering for the academic year 1954-1955, which are awarded on a competitive basis to applicants who are residents of the continental United States and are graduates of an accredited school in engineering. These fellowships offer up to $2,000.00 each.

Automotive Safety Foundation Fellowships—Applicants should have had practical experience in city or state highway engineering, or in related fields. Preference will be given to those applicants who are now employed in street and highway engineering and who secure a leave of absence in order to return to their present employer.

Rand McNally Fellowship — Applicants for this Fellowship must be currently employed by state highway departments or city governments.

Liberty Mutual Fellowship — Applicants for this Fellowship must show evidence of aptitude and interest in traffic engineering. It is not required for him to have entered the practice of traffic engineering.

Other Aids

Other fellowships similar to those described above may be made available for the coming academic year. In addition to the fellowships, a limited number of tuition scholarships are available for deserving students. Unsuccessful applicants for fellowships will be considered. Aid is also available for veterans and foreign students.

Certificate

Upon successful completion of the course of study, each student will be awarded a Certificate in Highway Traffic by the Committee on Transportation of Yale University.

Information And Application Forms

Applications for admission and special forms for fellowship application may be obtained by writing to the Director, Bureau of Highway Traffic, Yale University, Strathcona Hall, New Haven 11, Connecticut. Information concerning housing for married students, living costs, etc., will be furnished upon request.

* * * *

Two Automotive Safety Foundation fellowships for graduate study of highway engineering will be available during the 1954-55 academic year, the University of California has announced.

Each fellowship consists of $1500 plus fees for two semesters and two summer sessions, taken consecutively. Attendance at the summer sessions will be optional. The fellowships specify that preference be given to those with practical experience in highway engineering since college, but this is not mandatory.

Applicants must be graduates of a recognized engineering school and qualify for admission to graduate standing in University of California. Applications may be obtained from the Dean of the Graduate Division, University of California, Berkeley 4. Filing must include transcript of record and letters of recommendation.

Rx PRESCRIPTION FOR BETTER TRAFFIC CONTROL

Traffic Control, parking, and parking enforcement can become an efficient and economical operation in your city —when you install the dependable KARPARK TWIN-O-MATIC or UNIMATIC parking meters. They're superbly built by the famous HERSCHEDE HALL CLOCK COMPANY, makers of America's finest clocks.

FLEXIBLE—
tailor-made to suit your own requirements for coin combinations and time intervals.

EFFICIENT—
simple to operate, highly visible for easy enforcement, ruggedly built for accurate timing in any kind of weather.

ECONOMICAL—
provide substantial savings in law enforcement, maintenance, and replacement.

KARPARK TWIN-O-MATIC
Times two cars with one installation. Adjusts to any desired change in regulations. Reduces maintenance and collection costs to unheard-of lows. Ruggedly built for long life.

KARPARK UNIMATIC
For single car parking. Can be used for an entire system of single car parking, or, when used with Twin-O-Matic, can be placed at street ends and special single locations.

Available with
Automatic Dump System, Sealable Boxes, or Open Top Boxes.

For complete data, write to

THE KARPARK CORPORATION
CINCINNATI 6, OHIO

In Canada TWIN METER CO. OF CANADA, LTD.
5002 Park Avenue, Montreal 8, Quebec

Philadelphia Needs A Master Plan

The final report of a meeting of top transportation and traffic experts here last fall recommends immediate adoption of a "Master Area Traffic Plan" for a "major, concerted effort" at licking Philadelphia's No. 1 headache—traffic congestion.

The report was released after months of compilation of the opinions of speakers before the Philadelphia Urban Traffic Symposium sponsored by the Chamber of Commerce of Greater Philadelphia and Temple University September 24th at the Benjamin Franklin Hotel.

Prepared by a 17-member Urban Traffic Symposium Committee headed by Frederick B. Hufnagel, Jr., Assistant to Director of Purchases, Sun Oil Company, the 45-page report was sent by J. Harry LaBrum, Chairman of the Board of the Chamber, to C. E. Frishmuth, Chairman of the Mayor's Urban Traffic and Transportation Board, with the suggestion that Frishmuth's Committee would find it useful in the solution of the traffic problem.

Noting that the Symposium yielded the collective opinion that "many medicines may be needed to successfully treat Philadelphia's traffic congestion ailments," the report recommended the following:

"What is needed is an overall plan—perhaps a Master Area Traffic Plan—which would envision the problem in its entirety instead of attacking it at random, nibbling at the corners and accomplishing little where a major, concerted effort must be made to achieve success.

"Philadelphia is ready for such a plan now. It was agreed that such a plan should be prepared and implemented immediately before the city's traffic situation gets farther out of hand."

The report said that the following general recommendations, while not discussed by every speaker, received majority support. These included:

1) Increase capacity and adequacy of highway system.
2) Encourage a shift in passenger transportation toward public carrier facilities.
3) Control land use to limit the traffic pattern to efficient capacities of various transportation systems involved.
4) Stagger hours of work and shopping in the city.
5) Secure cooperation of all segments involved — governmental, municipal, transportation systems, and citizenry in general.

"The point was made strongly by the panels of experts," the report said, "that too often an alluring nostrum is offered as a universal panacea which attacks the symptoms instead of the disease itself."

The Urban Traffic Symposium was divided into two panels — one devoted to Mass Transportation and the other to Highway or Private Transportation. Each of the groups submitted memoranda outlining their respective viewpoints.

Concerning these views, the report said:

"Both are in agreement on the pressing problem of traffic congestion but one stresses the importance of enabling all traffic—particularly automotive—to travel with greater swiftness to relieve the situation while the other emphasizes that commuters should be diverted into mass transportation channels, leaving the streets free for public carriers and the 'relatively small percentage' of 'necessity drivers' in such volume as our street system can conveniently accommodate."

In a foreword to the report, the committee said that it was "universally conceded that traffic congestion in the City of Philadelphia has almost reached the saturation point and that remedies must be found at the earliest opportunity."

STOP
HOSPITAL ZONE
DIP
STOP SIGN AHEAD
DEAD END
CLOSE CLEARANCE
CRANE OVERHEAD
SLOW
SCHOOL
SAFETY ZONE
NARROW BRIDGE
SLOW 10 MPH
TRAFFIC SIGNAL AHEAD
UNEVEN TRACK
ONE LANE BRIDGE
SAFETY ZONE
STOP
COMMAND DRIVER OBEDIENCE
to YOUR PRESENT SAFETY SIGNS
Winko-Matic Alternate Flashers, visible for a mile, command driver obedience to your safety signs. Equipped with either attention-attracting red or amber signal lights the Winko-Matic is easily seen thru fog, rain, snow or ice. Winko-Matic Flashers will fit all standard 24" or 30" signs and are easily maintained.
BEST BY OBEDIENCE TEST
Write TODAY
for your copy of
Bulletin No. 701.
WINKO-MATIC
SIGNAL COMPANY
750 Broadway Lorain, Ohio

ITE-GRAM Winners Announced

In the October issue, TRAFFIC ENGINEERING there appeared the ITE-GRAM contest. Although there were over one hundred entries, not all of these were completed. TRAFFIC ENGINEERING wishes to thank Sam Nowell, Jr. and his wife, Elizabeth Jones Nowell, for their services in judging the contest. The judges chose the following entries as winners: First prize, three-week trip, all expenses paid, to Milford, Conn.; winner: Mr. and Mrs. W. A. Jones, Hollidaysburg, Penna. Second prize, two-week trip, all expenses paid, to Milford, Conn.; winner: Mr. and Mrs. Roger Nowell, Cadiz, Ohio. Third prize, one-week trip, all expenses paid, to Milford, Conn.; winner: Mr. and Mrs. S. G. Nowell, Sr., Ocean City, New Jersey. The judges of the popular contest reside in Milford, Conn. Copies of the solution are available at $.10 each. Write: Business Manager, TRAFFIC ENGINEERING, Strathcona Hall, New Haven 11, Conn.

Our New Baby...
Budget Priced Striper for Industry...Small Cities and Towns
REFLECTO-LINER, Jr.
It's NEW!
It's the Reflecto-Liner, Jr. and it's the budget's best buy for 1954. Unbelievably low priced, this mighty mite will give you big-machine striping performance on every job. From its mono-unit frame to the ample 9.3 cu. ft. compressor, this machine is a splendid example of Wald's carefully researched engineering. Maximum efficiency for applying either plain or reflective traffic paints is assured with the powerful 4 cycle, 2.5 horse-power engine and large 5 gallon paint supply tank. The vertical, horizontal and radial adjustments on this easily maneuvered machine offer extreme versatility and permits laying of 2"-4" lines right up to the curb.
Designed especially for Factories, Parking Lots, Airports, Small Cities and Towns, County and Township roads, the Reflecto-Liner, Jr. will do a man's sized job and can be purchased at a "petty cash" price.
Write, Wire or Phone Today for Bulletin 509.
WALD INDUSTRIES, Inc.
HUNTINGDON, PA.

— Index to Advertisers —

A'G'A DIVISION OF ELASTIC STOP NUT CORPORATION 226
G. M. Basford Company, New York, New York

ALUMINUM COMPANY OF AMERICA 242-243
Fuller & Smith & Ross Inc., Cleveland, Ohio

AMERICAN CONCRETE ..... Inside Front Cover
Griswold-Eshleman Co., Cleveland, Ohio

AUTOMATIC SIGNAL DIVISION OF EASTERN INDUSTRIES, INC. ... 227
Remsen Advertising Agency, Hamden, Connecticut

CATAPHOTE CORPORATION 241
A. Carl Eversole, Advertising, Toledo, Ohio

CROUSE-HINDS COMPANY ..... 268 and Inside Back Cover
Barlow Advertising Agency, Inc., Syracuse, New York

DUAL PARKING METER CORPORATION 230
Griswold-Eshleman Company, Cleveland, Ohio

DUNCAN PARKING METER COMPANY 249

GROTE MANUFACTURING COMPANY 246-247
Hugo Wagenseil & Associates, Dayton, Ohio

INTERSTATE RUBBER PRODUCTS CORPORATION 244
Walter C. Davison Company, Inc., Glendale, California

KARPARK CORPORATION 264
Smithson, Wyman & Withenbury, Inc., Cincinnati, Ohio

LYLE SIGNS, INC. 240
Alfred Colle Company, Minneapolis, Minnesota

MI-CO METER COMPANY 250
Jaap-Orr Company, Cincinnati, Ohio

MINNESOTA MINING AND MFG. COMPANY 225
Batten, Barton, Durstine & Osborn, Inc., Minneapolis, Minnesota

MIRO-FLEX COMPANY 248
Associated Advertising Agency, Wichita, Kansas

MUNICIPAL STREET SIGN COMPANY 262
Martin Smith Company, New York, New York

PRISMO SAFETY CORPORATION ..... Back Cover
Michener & O'Connor, Inc., Harrisburg, Penna.

PORTABLE TRAFFIC SIGNALS, INC. 252

REFLEXITE CORPORATION 254

STREETER-AMET COMPANY 257
Brandt Advertising Company, Chicago, Illinois

TRAFFIC AND STREET SIGN COMPANY 263
Duncan Brooks, Inc., Mineola, New York

TUTHILL SPRING COMPANY 254
Burlingame-Grossman, Chicago, Illinois

UNION METAL COMPANY 245
Griswold-Eshleman Company, Cleveland, Ohio

VEEDER-ROOT, INC. 228
Sutherland-Abbott, Boston, Mass.

WALD INDUSTRIES, INC. 266
Michener & O'Connor, Inc., Harrisburg, Penna.

L. R. WALLACE & COMPANY 261

WEAVER MACHINE COMPANY 261
W. H. Long Company, York, Penna.

WINKO-MATIC SIGNAL COMPANY 265

Professional Service Directory

EDWARDS, KELCEY and BECK
CONSULTING ENGINEERS
Surveys — Reports — Economic Studies — Design — Supervision
Transportation — Traffic — Parking — Terminals — Port and Harbor Works
Highways — Expressways — Grade Separations — Tunnels
Bridges — Water Supply — Management
3 William Street, Newark 2, N. J. • 250 Park Avenue, New York 17, N. Y.

DE LEUW, CATHER & COMPANY
CONSULTING ENGINEERS
Transportation, Public Transit and Traffic Problems
Subways, Railroads, Industrial Plants
Power Plants, Grade Separations,
Expressways, Tunnels, Municipal Works
150 N. Wacker Drive, Chicago 6, Ill.
79 McAllister St., San Francisco 2, Cal.

GANNETT FLEMING CORDDRY and CARPENTER, INC.
- - - ENGINEERS - - -
CONSULTING SERVICE FOR TRAFFIC, PARKING and TRANSPORTATION PROBLEMS
City Planning — Highways — Bridges — Flood Control
Water Supply — Sewerage— Industrial Waste — Garbage Disposal
Appraisals — Investigations — Management
600 NO. 2nd STREET HARRISBURG, PA.
Pittsburgh, Pa. Scranton, Pa. Daytona Beach, Fla. Medellin, Colombia, S. A.

JENKINS, MERCHANT & NANKIVIL
Consulting Engineers
Municipal Improvements Sewerage
Power Development Water Systems
Traffic Surveys Industrial Plants
Flood Control Recreational Facilities
Airports Investigations and Reports
805 East Miller Street
Springfield, Illinois

PALMER AND BAKER, INC.
CONSULTING ENGINEERS — ARCHITECTS
NAVAL ARCHITECTS — MARINE ENGINEERS
Surveys — Reports — Design — Supervision — Consultation
Transportation and Traffic Problems Tunnels Bridges Highways Airports
Industrial Buildings Waterfront and Harbor Structures
Graving and Floating Dry Docks Vessels, Boats and Floating Equipment
Complete Soils, Materials and Chemical Laboratories
Mobile, Ala New Orleans, La. Houston, Texas Washington, D. C.

PARSONS, BRINCKERHOFF HALL & MACDONALD
Engineers
Bridges, Highways, Tunnels, Airports,
Subways, Harbor Works, Dams, Canals,
Traffic and Transportation Reports,
Power Projects, Industrial Buildings,
Housing, Sewerage and Water Supply.
51 Broadway New York 6, N. Y.

KNAPPEN — TIPPETTS ABBETT — McCARTHY
Engineers
Traffic, Parking and Transportation
Surveys, Economic Studies and Financial Reports
Highways, Subways, Bridges, Tunnels—Airports, Ports, Harbors, Power Developments, Water Supply, Sewerage
Planning, Reports, Design, Supervision of Construction
62 West 47th St. 110 Market St.
New York 36, N. Y. San Francisco 11, Cal.

Highway Traffic Engineers, Inc.
345 Boylston Street
Brookline 46, Massachusetts
LOngwood 6-0275

MATTHEW CAREY
MUNICIPAL FINANCE CONSULTANT
Specializing in Financing
Off Street Parking Facilities
Financial Advisor in Connection with Highland Park, Royal Oak, Wyandotte, Michigan and Kankakee, Illinois Automobile Parking System Revenue Bond Issues
Box 3703 Kercheval Station
Detroit 15, Michigan

TRANSPORTATION PROBLEMS
HIGHWAYS
THE CLARKESON ENGINEERING COMPANY
INCORPORATED
285 Columbus Ave., Boston 16, Mass.
COmmonwealth 6-7720
EXPRESSWAYS AIRPORTS

AMMANN & WHITNEY
CONSULTING ENGINEERS
Design & Construction Supervision
Bridges, Buildings, Industrial Plants,
Special Structures, Foundations,
Airport Facilities, Expressways
76 Ninth Avenue, New York 11, N. Y.
724 E. Mason Street, Milwaukee 2, Wis.

S. Herbert Taylor Frank J. Sleeper
David L. Taylor William H. Taylor
SHERMAN, TAYLOR & SLEEPER
CONSULTING ENGINEERS
501 Cooper Street, Camden 2, N. J.
EMerson 5-0555
Park & Norwod Aves., Pennsauken 8, N. J.
MErchantville 8-4848

Yearbook Changes

BARKAN, Benedict G. (Assoc.)
Assistant City Planner, City Planning Commission, 211 East Water Street, Syracuse 2, New York.

BUCKMAN, Thomas R. (Assoc.)
City Traffic Engineer, 2524 Marigold, Ft. Worth, Texas.

CAMPBELL, Earl Wilson (Junior)
13369 Robson Street, Detroit 27, Mich.

CANNING, William S. (Member)
Engineering Dir. Kingsley 5-6000. Keystone Auto Club, Philadelphia. SEND MAIL: Rose Valley Road, Wallingford, Pennsylvania.

CARSTEN, W. H. (Member)
Traffic Engineer, Room 419, City Hall, Dallas, Texas.

CLEVELAND, Donald E. (Junior)
Traffic Engineer, Ramp Buildings Corporation, 230 Park Avenue, New York 17, N. Y.

COMISKEY, John H., Jr. (Junior)
Traffic Engineer II, Dept. of Streets, Bur. of Traffic Engr., Rm. 1002, City Hall Annex, Philadelphia, Pennsylvania.

COX, Robert L. (Junior)
c/o Foster Wheeler Corp., Judibana Office, Las Piedros, E.D.O., Falcon, Venezuela.

CRAWFORD, Glenn A.(Assoc.)
City Engineer & Street Superintendent, City of Pomona. LYcoming 9-3071. SEND MAIL: 1700 Oak Street, Burbank, California.

DORSEY, Ralph T. (Member)
Principal Street Traffic Engineer, 3204 Palm Avenue, Manhattan Beach, California.

FRITZCHE, O. Herbert (Assoc.)
Dir., Div. Planning Traffic & Economics, New Jersey State Highway Dept. TRenton 6-2592. SEND MAIL: 104 West Upper Ferry Road, West Trenton, N. J.

HARLESTON, Robert H., Jr. (Junior)
Area Supervisor of Transportation, State Education Finance Comm. SEND MAIL: P. O. Box 455, Greenwood, South Carolina.

HILL, George A. (Assoc.)
3708 Thornwood Dr., Sacramento 21, California.

HOLMES, Robert S. (Member)
Executive Assistant, Wald Industries, Inc., Huntingdon, Pennsylvania.

KELL, James H. (Junior)
9203d TC-TSU, Transportation Research & Development Command, Ft. Eustis, Va.

KIDWELL, Edward (Assoc.)
Asst. City Traffic Engineer. CApitol 9371, Ext. 565. SEND MAIL: 3631 Agnes St., Houston 17, Texas.

KUNDE, George H. (Junior)
Traffic Engineer, Rader Engineering Co. 9-4741. SEND MAIL: 49 N. W. 49 Avenue, Miami, Florida.

LOUTZENHEISER, D. W. (Assoc.)
Chief, Urban Highway Branch, Bureau of Public Roads, Washington 25, D. C.

MANCINI, Philip S. (Assoc.)
State Dir., Rhode Island Dept. of Public Works. SEND MAIL: 2 Millard Avenue, Centerdale, North Providence, R. I.

OLMSTEAD, Evan E. (Assoc.)
Traffic Engineer, Chicago Transit Authority, Rm. 7155, Merchandise Mart Plaza, Chicago 54, Ill. MOhawk 4-7200.

PETERSON, Dennis L. (Junior)
Oregon State Highway Dept. SEND MAIL: 450 Grove Street, Salem, Oregon.

PLUTAE, Paul
170 Washington Street, Burbank, California.

POWILLS, Michael A., Jr. (Junior)
Traffic Engineer III, Bur. of Street Traffic, Rm. 709, City Hall, Chicago 2, Ill. RAndolph 6-8000, Ext. 2138.

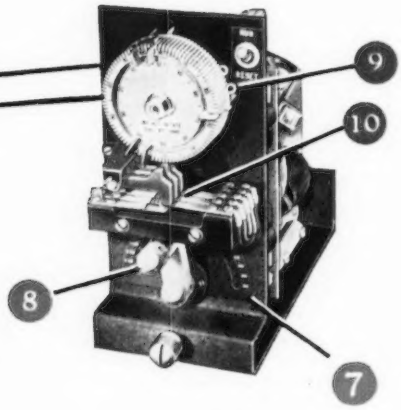
PRICE, Harry O. (Junior)
Traffic Services Section, State Highway Commission. SEND MAIL: 207 Kensington Dr., Madison 4, Wisconsin.

WANTOCH, Henry J. (Junior)
Traffic Control Engineer III, 804 City Hall, Milwaukee 16, Wisconsin.

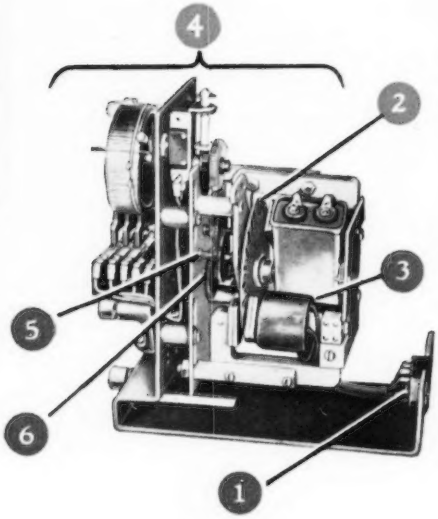
YOUNG, Thomas E. (Junior)
Asst. Traffic Engineer. GArfield 5700, Ext. 423. SEND MAIL: 1962 Connecticut Ave., Cincinnati 24, Ohio.

IT'S NEW

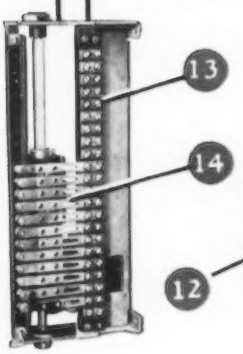
You get greater flexibility with CROUSE-HINDS



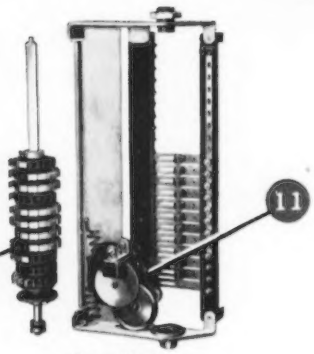
Dial-Unit
Enlarged Front View



Dial-Unit
Enlarged Side View



Cam-Unit
Right Side



Cam-Unit
Cam Shaft Removed
Left Side

CONDULETS · TRAFFIC SIGNALS

Type LS Synchronous Controller

It provides for future growth

At any location where a single-dial controller is adequate today, but where a more complex controller may be required in the future, the Crouse-Hinds Type LS Synchronous Controller makes an ideal installation. It can be supplied for non-interconnected, future-interconnected, or interconnected operation.

The Crouse-Hinds Type LS Synchronous Controller differs in its basic construction from controllers of conventional design. In the Type LS Controller, each timing-dial with its driving motor is constructed as an individual unit. All dial-units are jack-mounted to the controller assembly, and may be quickly and easily removed.

The Type LS Controller can be supplied with 1, 2, or 3 dial-units. Each dial-unit can be set for a different time-cycle, a different timing-split and a different offset. All controllers have provision for three dial-units regardless of the number of units initially purchased. Therefore, the Type LS Controller is ideal where a single-dial controller is sufficient at the time of installation, but where future needs may call for additional dials.

The Type LS Controller may be purchased with 1, 2, or 3 resets on each dial-unit. When shipped from the factory, all dial-units are wired for 3 resets. Reset 2 and reset 3 may be added in the field to single-reset dial-units by simply installing dial contacts and switch arms. It's as easy as that!

Important Features of the Dial Unit

1. Jack-mounted quickly-removable from the controller assembly.
2. Disc-type synchronous motors provide high-torque with proven reliability.
3. Electro-dynamic braking assures accurate maintenance of offset.
4. All parts readily accessible for inspection and maintenance.
5. Heavy-duty bearings used throughout.
6. Long-wearing, precision-cut reduction gearing.
7. Full-length visual scale shows time-cycle in use.
8. Latch-in gear shift assures exact engagement with dial gear.
9. Precision dial with retaining ring—timing keys are locked in position.
10. Dial-contact assembly especially designed for easy maintenance.

Important Features of the Cam Unit

11. Motor-driven for greater flexibility, smoother operation, and longer life.
12. Replaceable cam lobes assure unequalled color sequence and interval flexibility.
13. Fifteen circuits wired complete.
14. Heavy-duty color-circuit contacts rated at 10 amperes, 115 volts.

The Type LS Controller is built to Crouse-Hinds high standard of quality from the finest materials by skilled workers. It will solve many of your traffic problems.

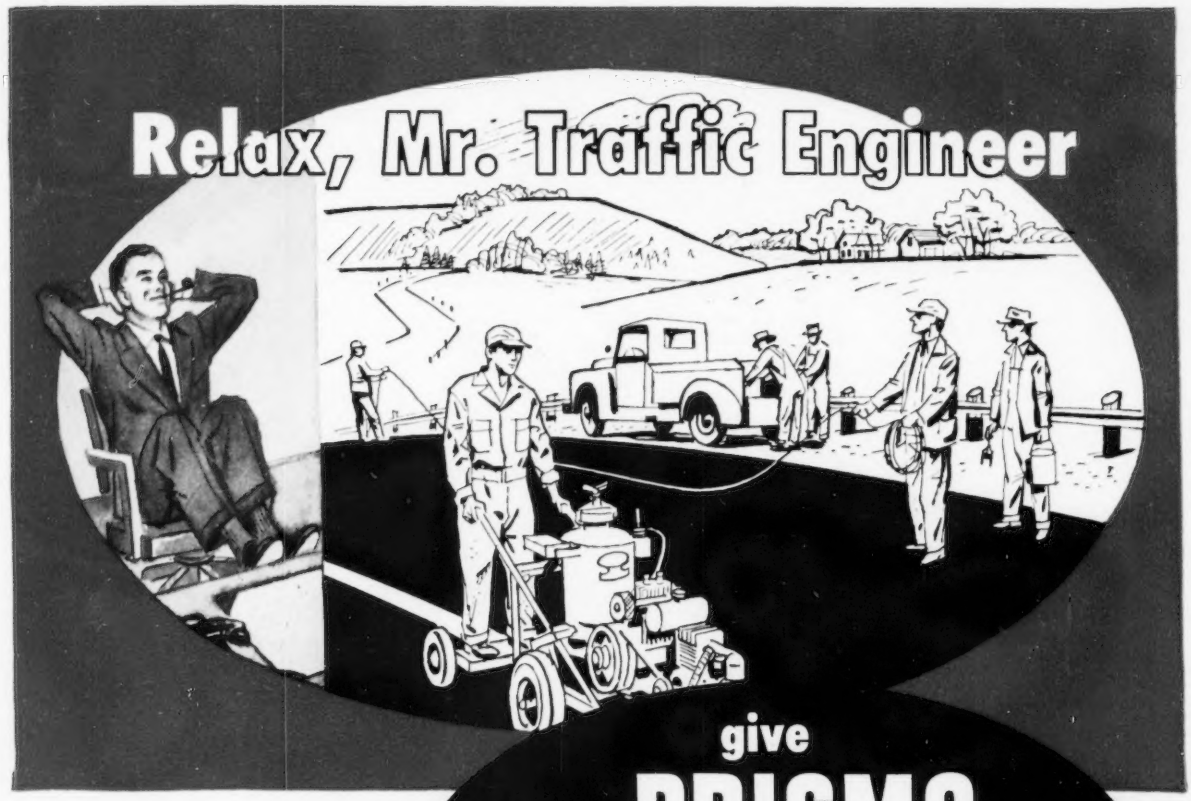
CROUSE-HINDS COMPANY
Syracuse 1, N. Y.

OFFICES — Birmingham — Boston — Buffalo — Chicago — Cincinnati — Cleveland — Dallas — Denver — Detroit — Houston — Indianapolis — Kansas City — Los Angeles — Milwaukee — Minneapolis — New Orleans — New York — Philadelphia — Pittsburgh — Portland, Ore. — San Francisco — Seattle — St. Louis — Tulsa — Washington. RESIDENT REPRESENTATIVES — Albany — Atlanta — Baltimore — Charlotte — Corpus Christi — Richmond, Va.
Crouse-Hinds Company of Canada, Ltd., Toronto, Ont.

A Nationwide Distribution Through Electrical Wholesalers

AIRPORT LIGHTING · FLOODLIGHTS

Relax, Mr. Traffic Engineer



give PRISMO CONTRACTING SERVICE your striping problems

Here is a unique and valuable service that will enable you to get your striping projects done quickly, expertly, and with absolutely no strain on you! Sound interesting? It is, and helpful, too! It's Prismo's Contract Technician Service—a comprehensive "package" which offers experienced, factory-trained crews of technicians together with the proper equipment and the very finest in reflective marking materials . . . all furnished on a contract basis to handle *your* specific marking problem. This service has been used successfully the country over. Regardless of your marking problem—highway or municipal striping, industrial marking, airport striping, etc.—you can save time, trouble and expense by calling on Prismo Contracting Service.

Write, wire or phone today for full details.

PRISMO
SAFETY CORPORATION
HUNTINGDON • PENNSYLVANIA

561